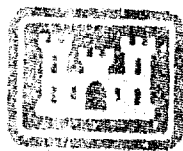


AD-A215 121



US Army Corps
of Engineers

New Orleans District

Cultural Resources Series
Report Number: COELMP/PD-87-04

FINAL REPORT OF CULTURAL RESOURCE INVESTIGATIONS
WITHIN THE U.S. ARMY CORPS OF ENGINEERS NEW ORLEANS TO VENICE
HURRICANE PROTECTION PROJECT

Final Report
December 1988

Agency for Conservation Archaeology
Eastern New Mexico University
Portales, New Mexico

Prepared for
U.S. Army Corps of Engineers
New Orleans District
P.O. Box 60267
New Orleans, LA 70160-0267

Distribution Unlimited

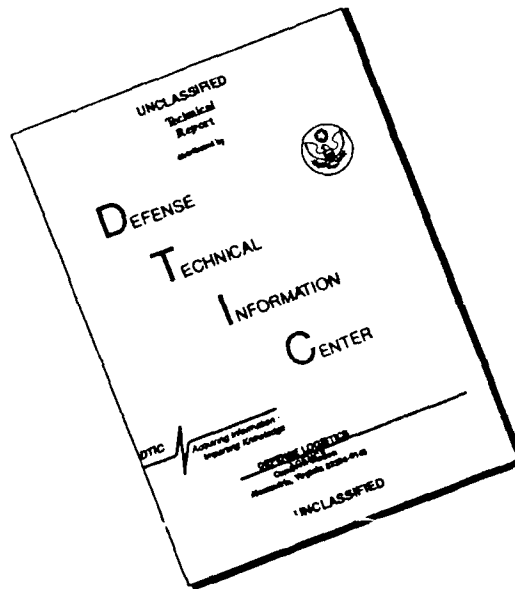
DTIC
ELECTE
NOV 30 1989
S B D

DISTRIBUTION STATEMENT A

Approved for public release;
Distribution Unlimited

89 11 28 016

DISCLAIMER NOTICE



THIS DOCUMENT IS BEST QUALITY AVAILABLE. THE COPY FURNISHED TO DTIC CONTAINED A SIGNIFICANT NUMBER OF PAGES WHICH DO NOT REPRODUCE LEGIBLY.

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER COELMR/PD-87-04	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) Final Report of Cultural Resource Investigations Within the U.S. Army Corps of Engineers New Orleans to Venice Hurricane Protection Project		5. TYPE OF REPORT & PERIOD COVERED Final
		6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) John L. Montgomery, Keith Landreth, Joan Exnicios, Kathleen Bowman, and James Bowman		8. CONTRACT OR GRANT NUMBER(s) DACW29-86-D-0094
9. PERFORMING ORGANIZATION NAME AND ADDRESS Agency for Conservation Archaeology Station 9, Eastern New Mexico University Portales, New Mexico 88130		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS U.S. Army Corps of Engineers, New Orleans District P.O. Box 60627 New Orleans, Louisiana 70160-0267		12. REPORT DATE December 1988
		13. NUMBER OF PAGES 777
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE
16. DISTRIBUTION STATEMENT (of this Report) Unclassified: Distribution is Unlimited		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)		
18. SUPPLEMENTARY NOTES		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Adolph's Camp (16PL80) East Bank Barrier Levee Archeology Fort de la Boulaye (16PL27) Cultural Resources Management Fort Jackson (16PL38) Dunn's Camp (16PLS2) Fort St. Philip (16PL39) (continued)		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This report is a synopsis and summary of the cultural resource investigations conducted within the U.S. Army Corps of Engineers New Orleans to Venice Hurricane Protection Project Area. Recommendations are given for completing the cultural resource compliance-related activity within the Project Area in Plaquemines Parish, Louisiana. An introduction to and history of the New Orleans to Venice Hurricane Protection Project is given in Chapter I. Included with this information is a		

19. (continued).

History

New Orleans to Venice Hurricane Protection Project

Olga (16PL61)

Ostrica (16PL66)

Plaquemines Parish

Prehistory

Reach A

Reach B-1

Reach B-2

Reach C

West Bank Barrier Levee

20. (continued).

discussion of the scope of work and project effects. Chapter II is a discussion of the environmental characteristics of the Project Area, including geology, geomorphology, climate, flora, and fauna. The region's prehistory and history are summarized before the archeological information specific to the Project Area is provided. Other background information is found in Chapter IV, and includes a summary of the cultural resource investigations conducted in the Project Area. The research design for this report is provided in Chapter V. A summary of the cultural resources found in the Project Area is given in Chapter VI. Information from the first six chapters is then synthesized in the final three chapters. Chapter VII presents the synthesis and future research orientations. Chapter VIII is a description of the various management options and evaluations. Chapter IX contains the management recommendations.

Four appendices contain the scope of services, their modifications, the site forms, and the engineering maps that are applicable to the project. Research designs for mitigation at the National Register listed and eligible cultural resource sites are provided in four annexes to this report.

Since 1973, 31 cultural resource surveys have been completed in the Project Area. These surveys have recorded 80 archeological sites. Forty of these sites will be directly or indirectly affected by land altering activities associated with the New Orleans to Venice Hurricane Protection Project. Of the 40, three sites are currently listed as National Historic Landmarks. These sites are Fort Jackson (16PL38), Fort St. Philip (16PL39), and Fort de la Boulaye (16PL27). An additional four of the 40 sites affected by the project are eligible for inclusion in the National Register of Historic Places. These sites are Olga (16PL61), Ostrica (16PL66), Adolph's Camp (16PL80), and Dunn's Camp (16PL82).

Management recommendations include archeological field survey of four areas north of Fort Jackson (16PL38). Mitigation is required if the National Register of Historic Places listed or eligible sites cannot be avoided. Research designs for mitigation of the three National Historic Landmark sites and the four National Register of Historic Places eligible sites are included with this final report.

**FINAL REPORT OF CULTURAL RESOURCE INVESTIGATIONS
WITHIN THE U.S. ARMY CORPS OF ENGINEERS NEW ORLEANS TO VENICE
HURRICANE PROTECTION PROJECT**

By

**John L. Montgomery, Keith Landreth, Joan Exnicios
Kathleen Bowman, and James Bowman**

**John L. Montgomery, Ph.D.
Principal Investigator**

Final

December 1988

Prepared for the Department of the Army, New Orleans District, Corps
of Engineers, P.O. Box 60267, New Orleans, Louisiana 70160, Under
Delivery Order No. 0001, Contract No. DACW29-86-D-0094

**Agency for Conservation Archaeology
Eastern New Mexico University
Portales, New Mexico**



DEPARTMENT OF THE ARMY

NEW ORLEANS DISTRICT, CORPS OF ENGINEERS

P.O. BOX 60267

NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF

November 10, 1988

Planning Division
Environmental Analysis Branch

To the Reader:

This report was funded and guided by the U.S. Army Corps of Engineers, New Orleans District. It provides guidance for management decisions regarding cultural resources which may be affected by planning and construction of the New Orleans to Venice, Louisiana, Hurricane Protection Project.

This report comprehensively documents the known cultural resources of the project vicinity and recommends procedures to assure that construction does not damage significant resources.

This report has been reviewed and accepted by the New Orleans District. We commend the Contractor's effort on this large and complicated project.

Howard R. Bush

Howard R. Bush
Authorized Representative of the
Contracting Officer

R. H. Schroeder, Jr.

R. H. Schroeder, Jr.
Chief, Planning Division

ACKNOWLEDGMENTS

This report represents the combined efforts of many individuals. We would like to thank several individuals from the New Orleans District, Corps of Engineers, Planning Division: Dr. James E. Chase, Mr. Howard Bush, Dr. Ed Lyons, Ms. Carroll Kleinhans, Ms. Caroline Albright, Mr. Michael Stout, Mr. Van Button, Mr. Ted Hokannen, and Mr. John Hughes. All of these people took time out from very busy schedules to provide information and guidance. Dr. Chase and Mr. Bush served as Contracting Officer's Representatives, and Dr. Chase also served as Technical Representative. Their assistance and technical guidance are most appreciated.

Dr. Kathleen Byrd (State Archeologist), Mr. Duke Rivet (Environmental Review Coordinator), and Nancy Hawkins (State of Louisiana, Department of Culture, Recreation, and Tourism) generously provided access to their records and gave us the benefit of their wealth of experience in Louisiana archeology. Their suggestions, comments, and critiques were most appreciated.

A great number of individuals gave generously of their time and shared their talents and information in the course of research and report writing. These include Don Bascle, Ruth Blazina-Joyce, Sam Hyde, Dan Joyce, Fred Nials, John Nolan and Melinda Russell. Joan Exnicios directed the historical research. Donna Robichaux, Amanda Lambert, and Sandra Troyer painstakingly typed (and retyped) numerous draft versions of this document. James Bowman and Scott Kather of the ACA Computer Graphics Laboratory plotted the maps. Special thanks to Kathleen Bowman who took time out from other projects to edit and critique the final draft document. Sandra Troyer also edited portions of the manuscript. Mr. Bud Stephens, ENMU Printing Services, deserves a thank you for his help with Table 3.

Other individuals and institutions that deserve thanks include Mr. Roderick Lincoln, the staffs of the Fort Jackson Museum, the Louisiana State University Library, the University of New Orleans Library, and the Tulane University Library.



Accession For	
NTIS GRA&I	<input checked="checked" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	

MANAGEMENT SUMMARY

This report is a summary of cultural resource management projects conducted for the U.S. Army Corps of Engineers as part of the New Orleans to Venice Hurricane Protection Project (hereafter termed NOV). As a summary, this report uses the information provided in 31 previous cultural resource management studies conducted over the last 14 years in areas affected by the NOV. These data are also found in the numerous documents that are smaller in focus and apply only to portions of the NOV Area. In contrast, this document is concerned with the cultural resources and cultural resource management activities within the entire NOV Area.

A total of 80 cultural resource sites are located within an arbitrary area designated as the "NOV Area". Of these, land altering activities associated with the NOV will directly or indirectly affect 40 sites that exist in the NOV Area. Federal legislation and associated regulations stipulate that the New Orleans District of the Corps of Engineers (hereafter termed NOD-COE) is responsible for appropriate management of these affected cultural resources. The purpose of this report, then, is to provide in one document a comprehensive summary of what has been done previously to identify and evaluate the cultural resources in the NOV Area and to indicate the next steps for managing these cultural resources. In this way the NOD-COE is fulfilling the spirit and intent of the federal legislation for managing and protecting cultural resources. The large and comprehensive scope of these purposes required two specific activities. These are: 1) review all cultural resource identifications efforts within the NOV-affected area; and 2) review and evaluate all previously recorded sites within the NOV-affected area. The review and evaluation utilized the guidelines for cultural resource surveys issued by the Department of the Interior. Sites within the direct and/or indirect impact areas of the NOV are evaluated for eligibility for nomination to the National Register of Historic Places (NRHP) using the criteria for evaluation listed in 36CFR60.

Three National Historic Landmarks will be affected by the NOV. These are: Fort De La Boulaye (16PL27), Fort Jackson (16PL38), and Fort St. Philip (16PL39). Recommendations concerning management options and treatment of these cultural resources are presented as Annexes A, B, and C of this document. For cultural resources evaluated as eligible for nomination to the NRHP, recommendations are made for their appropriate treatment in Annex D of this report.

Our role in this process is to make appropriate recommendations and to assist in the decision making process regarding these resources. Final determinations of effect and decisions regarding treatment of cultural resources will be made by the designated NOD-COE representative in consultation with the State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP). Our recommendations and management options for the completion of cultural resource compliance activity within the NOV Area follow. Justifications for these recommendations and data regarding how these decisions were arrived at are incorporated into the body of this document.

CULTURAL RESOURCE SURVEYS

All proposed construction and levee enlargement corridors with the exception of four areas within the West Bank Barrier Levee have been surveyed. These surveys meet or exceed established federal guidelines for cultural resource identification efforts. Areas that do not require further survey are Reach A, Reach B-1, Reach B-2, Reach C, the East Bank Barrier Levee, and the West Bank Barrier Levee downriver from Fort Jackson.

The unsurveyed areas along the West Bank Barrier Levee are within high probability areas for historic sites. Two options are given for management's consideration. The first option is to confine all levee enlargement activity to the existing levee ROW. If this is possible, then no additional identification efforts are necessary. If it is not possible to confine activities to the ROW, then survey of these areas and an inventory report will be required.

These areas are:

North of Fort Jackson, along the west bank segment of the East Bank Barrier Levee, from levee station 550+11.76 to 693 +15, station 736 +2.81 to 745 +73.06, station 786 +80 to 1109 +18.53 and station 1184 +26.47 to 1278.00.

CULTURAL RESOURCE SITES

National Landmark Sites

Fort de la Boulaye (16PL27), Fort St. Philip (16PL39), and Fort Jackson (16PL38) are National Historic Landmarks and as such are also listed in the NRHP (36CFR65.2[b]). They are therefore acted upon under Section 106 and 110f of the National Historic Preservation Act and 36CFR65. Consultation with the ACHP and the Louisiana SHPO is required. The NOD-COE will decide and approve on "methods to avoid, reduce, or mitigate adverse effects" (Section 106) on these three properties. The present landowner(s) of these properties must be also contacted and their consent must be obtained. Engineering plans for construction activity at these locales indicate that the present projected impacts have been reduced to a minimum and there are no viable alternatives to further reduce these impacts. To complete work at these locations data recovery plans incorporating appropriate measures for mitigation of adverse impacts to the properties will need to be agreed upon by the NOD-COE, Louisiana SHPO, the ACHP, and the landowners. These measures will then be incorporated into a Memorandum of Agreement and implemented by the NOD-COE. Data recovery plans and recommendations for the mitigation of proposed adverse impacts to these sites are incorporated as Annex A, B, and C of this report. Construction activity should not be allowed to proceed at these locations until these measures are completed and approved by all involved parties.

NRHP Eligible Cultural Resources

Four sites have been recommended as eligible for the NRHP. These are: Olga (16PL61), Ostrica (16PL66), Adolph's Camp (16PL80), and Dunn's Camp (16PL82). Avoidance of these sites is not feasible. Should the Louisiana

SHPO concur with these eligibility recommendations, a data recovery plan for Phase I mitigation of these sites is required. The present landowner(s) of these properties must be also contacted and their approval must be obtained. Data recovery plans for Phase I mitigation at these sites are incorporated as Annex D of this report. Construction activity should not be allowed to proceed at these locations until all mitigative measures are completed and approved by all involved parties.

Cultural Resources Not Eligible for the NRHP

Provided the Louisiana SHPO concurs with the eligibility recommendations presented within this report, the NOD-COE may proceed with levee enlargement and construction at the locations of those cultural resources recommended not eligible for the NRHP. No further compliance activity is necessary for these locations. If significant and previously unidentified cultural resources are located during the course of construction, the NOD-COE will fulfill its responsibilities by compliance with the requirements of the Archeological and Historic Preservation Act (16 U.S.C. 469[a]).

TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS	ii
MANAGEMENT SUMMARY.	iii
LIST OF FIGURES.	x
LIST OF TABLES.	xi
 I. INTRODUCTION.	 1
PURPOSE OF THIS REPORT.	1
NOV AREA LOCATION.	2
HISTORY OF THE NOV.	2
Reach A.	2
Reach B-1.	4
Reach B-2.	4
Reach C.	4
East Bank Barrier Levee	4
West Bank Barrier Levee	4
SCOPE OF WORK.	4
PROJECT EFFECTS.	5
PREVIOUS CULTURAL RESOURCE MANAGEMENT PROJECTS.	6
CONTRACTING INSTITUTION	6
DISPOSITION OF RESEARCH MATERIALS.	6
SUMMARY.	6
 II. EXTERNAL ENVIRONMENTAL PARAMETERS	 9
PHYSICAL FEATURES.	9
Topography and Soils.	9
Geomorphology, Geology, and Hydrology.	11
CLIMATE	14
FLORA	14
FAUNA	16
 III. CULTURAL PARAMETERS	 17
BACKGROUND DATA SOURCES	17
REGIONAL CULTURAL HISTORY.	18
Prehistoric Background	18
Historical Background.	25
CULTURE HISTORY OF THE NOV AREA.	29
Prehistoric Background.	29
Prehistoric Cultural Sequence.	32
Historical Background.	33
 IV. CULTURAL RESOURCE INVESTIGATIONS IN THE NOV AREA.	 47
CULTURAL RESOURCE SURVEYS CONDUCTED FOR THE NOV.	47
CULTURAL RESOURCE SURVEYS CONDUCTED FOR NEW LEVEE CONSTRUCTION, LEVEE SETBACKS, LEVEE ENLARGEMENTS, REVETMENTS AND SLOPE PAVEMENT CONSTRUCTION.	57
CULTURAL RESOURCE SURVEYS CONDUCTED FOR DREDGING PROJECTS.	61

CONTENTS

Page

CULTURAL RESOURCE SURVEYS CONDUCTED FOR OIL AND GAS PIPELINES	62
CULTURAL RESOURCE SURVEYS CONDUCTED FOR REMOTE SENSING PROJECTS	62
CULTURAL RESOURCE SURVEYS CONDUCTED AS INVENTORY LEVEL PROJECTS	64
V. PROJECT RESEARCH DESIGN	65
INTRODUCTION	65
<i>Prehistoric and Historic Overview.</i>	66
<i>Practical and Theoretical Significance.</i>	66
<i>Theoretical Basis for the Proposed Investigation.</i>	66
<i>Anticipated Gains in Cultural Resource Knowledge</i>	67
<i>Significance of the Investigations.</i>	67
<i>Significance for Cultural Resource Theory.</i>	68
<i>Management Significance</i>	68
STATEMENT OF SPECIFIC RESEARCH GOALS.	68
<i>Specific Aspects to be the Focus of the Investigation</i>	69
<i>Definition of Terms.</i>	70
<i>Specification of Research Operations.</i>	70
<i>Description of Investigative Tools or Methodologies</i>	71
<i>Populations and Sampling Design.</i>	72
VI. CULTURAL RESOURCES WITHIN THE NOV AREA.	73
PREHISTORIC MOUNDS.	83
16PL8 Adams Bay	83
16PL12 Pointe a la Hache.	83
16PL13 Buras Mounds	83
16PL36 The Hills.	83
PREHISTORIC SHELL MIDDENS.	83
16PL81 Live Oak Bayou.	83
HISTORIC MILITARY SITES.	85
16PL27 Fort de la Boulaye.	83
16PL38 Fort Jackson.	84
16PL39 Fort St. Philip.	85
HISTORIC ETHNOGRAPHIC SITES.	85
16PL61 Olga.	85
16PL66 Ostrica.	85
16PL80 Adolph's Camp.	86
HISTORIC INDUSTRIAL SITES	86
16PL47 Salt Works Site.	86
16PL82 Dunn's Camp Site	86
16PL139 Humble Oil Site.	86
16PL140 Bohemia Pumping Station.	87
HISTORIC PLANTATIONS	87
16PL84a Harlem Plantation	87
16PL108 Union Plantation.	87
16PL103 Bellevue Plantation.	87
16PL104 Sophie Plantation.	87
16PL106 Monsecou Plantation.	88
16PL135 Tabony Plantation.	88

CONTENTS

Page

HISTORIC TENANT FARMS/FARMSTEADS.	88
16PL136 <i>P. Adema Site</i>	88
HISTORIC CEMETERIES.	88
16PL69 <i>Tabony Cemetery Site</i>	88
16PL132 <i>Old St. Patrick's Cemetery</i>	88
16PL134 <i>Urquhart Cemetery</i>	89
16PL138 <i>Bohemia Cemetery</i>	89
16PL141 <i>Union Plantation Cemetery</i>	89
16PL146 <i>Phoenix Cemetery</i>	89
HISTORIC STANDING STRUCTURES	89
<i>Creole Raised Cottages</i>	89
<i>Small Creole Houses</i>	90
<i>Shotgun Houses</i>	90
<i>Victorian Cottages</i>	91
<i>Bungalows</i>	91
<i>Historic Civic Structures</i>	91
<i>Southern Pyramid Houses</i>	92
HISTORIC ARTIFACT SCATTERS.	92
16PL64 <i>Point Pleasant Camp</i>	92
16PL65 <i>Bohemia Canal</i>	92
16PL67 <i>Jeanfreau Site</i>	92
16PL68 <i>Point Bolivar Site and 16PL95 Site 22A</i>	93
16PL70 <i>Matulich Site</i>	93
16PL72 <i>Haspel and Davis Site</i>	93
16PL73 <i>Fusich Site</i>	93
16PL74 <i>Brancovich Site</i>	93
16PL75 <i>Nestor Canal I</i>	93
16PL76 <i>Arbula</i>	94
16PL77 <i>Barrow and Slatter Site</i>	94
16PL83 <i>WP4-1</i>	94
16PL78 <i>Harris Bayou Site</i>	94
16PL79 <i>Meyers Camp Site</i>	94
16PL96 <i>Tree Site</i>	94
16PL131 <i>Home Place</i>	95
16PL137 <i>Nero 2</i>	95
16PL142 <i>Gravolet Canal Site</i>	95
16PL143 <i>Griffin Site</i>	95
16PL144 <i>Upper Pointe a la Hache 1</i>	95
16PL145 <i>Upper Pointe a la Hache 2</i>	95
Y16PL-A <i>Hack's Bayou</i>	95
Y16PL-B <i>Zimmerman House</i>	96
Y16PL-C <i>Empire Oil Field II</i>	96
Y16PL-D <i>Louis Zetturich</i>	96
UNKNOWN SITES	96
16PL48 <i>The Jump Site</i>	96
16PL50 <i>Unnamed Bayou (Urrand Bayou)</i>	96
16PL51 <i>Lucas Canal Site</i>	96

VII. SYNTHESIS AND FUTURE RESEARCH ORIENTATIONS.	27
SUMMARY OF CULTURAL RESOURCES LOCATED.	27
THE REGIONAL FRAMEWORK.	27
ENVIRONMENTAL CORRELATIONS	28
FUTURE INVESTIGATION NEEDS AND DIRECTIONS	28

CONTENTS	Page
VIII MANAGEMENT OPTIONS AND EVALUATIONS	100
EVALUATION OF CULTURAL RESOURCE SURVEYS	100
<i>Reach A: City Price to Tropical Bend</i>	102
<i>Reach B-1: Tropical Bend to Fort Jackson and</i>	
<i>Reach B-2: Fort Jackson to Venice.</i>	102
<i>Reach C: Phoenix to Bohemia.</i>	103
<i>East Bank Barrier Levee.</i>	103
<i>West Bank Barrier Levee</i>	104
EVALUATION OF CULTURAL RESOURCE SITES	107
<i>Ostrica (16PL66) and Olga (16PL61).</i>	110
<i>Adolph's Camp (16PL80).</i>	110
<i>Dunn's Camp (16PL82).</i>	116
MANAGEMENT OPTIONS.	116
<i>Cultural Resource Surveys.</i>	116
<i>Cultural Resources: National Landmark Sites.</i>	117
<i>Cultural Resources: NRHP Eligible Sites</i>	118
IX. MANAGEMENT RECOMMENDATIONS.	120
CULTURAL RESOURCE SURVEYS.	120
CULTURAL RESOURCE SITES.	120
<i>National Landmark Sites.</i>	120
<i>National Register Eligible Properties</i>	120
REFERENCES CITED	122
APPENDIX A: SCOPE OF SERVICES	
APPENDIX B: MODIFICATION TO SCOPE OF SERVICES	
APPENDIX C: SITE FORMS (separate volume)	
APPENDIX D: ENGINEERING MAPS (separate volume)	
ANNEX A: RESEARCH DESIGN FOR PHASE I MITIGATION OF FORT JACKSON, 16PL38, PLAQUEMINES PARISH, LOUISIANA.	A-1
ANNEX B: RESEARCH DESIGN FOR PHASE I MITIGATION OF FORT ST. PHILIP, 16PL39, PLAQUEMINES PARISH, LOUISIANA	B-1
ANNEX C: RECOMMENDATIONS FOR FORT DE LA BOULAYE, 16PL27, PLAQUEMINES PARISH, LOUISIANA	C-1
ANNEX D: RESEARCH DESIGN FOR PHASE I MITIGATION OF SITES 16PL61, 16PL66, 16PL80, AND 16PL82, PLAQUEMINES PARISH, LOUISIANA	D-1

LIST OF FIGURES

Figure		Page
1.	Map illustrating the NOV Area boundaries and the locations of the reaches and levees	3
2.	Geomorphology of the NOV Area (Oversize).	*
3.	Map illustrating the five major Mississippi River delta complexes.	13
4.	Cultural resource surveys conducted within the NOV Area (Oversize)	*
5.	Cultural resource sites within the NOV Area (Oversize)	*
6.	Process applied to evaluation of previous cultural resource surveys in the NOV Area.	101
7.	Remaining unsurveyed areas of the NOV.	105
8.	Site evaluation process	108

* All oversize figures are located in the back pocket of the report.

LIST OF TABLES

Table	Page
1. Cultural Resource Projects Conducted for the NOV.	7
2. Mean Precipitation and Temperature Information for New Orleans, Louisiana.	15
3. Cultural Resource Surveys Conducted Within the NOV Area	48
4. Cultural Resource Sites Located Within the NOV Area	74
5. Listing of Sites by Category Within the NOV Area	82
6. National Register Evaluation of Affected Cultural Resource Sites Within the NOV Area.	111
7. Comparison of Past and Present NRHP Recommendations for Cultural Resource Sites Within the NOV Direct Impact Area.	114

I. INTRODUCTION

This report is a summary of cultural resource management projects conducted for the U.S. Army Corps of Engineers as part of the New Orleans to Venice Hurricane Protection Project (hereafter termed NOV). As a summary, this report uses the information provided in previous cultural resource management studies conducted over the last 14 years in areas affected by the NOV. These data are also found in numerous documents that are smaller in focus and that apply only to portions of the NOV Area. In contrast, this document is concerned with the cultural resources and cultural resource management activities within the entire NOV Area.

PURPOSE OF THIS REPORT

Land altering activities associated with the NOV can directly or indirectly affect cultural resources that exist in the NOV Area. Federal legislation and associated regulations stipulate that the New Orleans District of the Corps of Engineers (hereafter termed NOD-COE) is responsible for taking appropriate action to insure that NOD-COE effect on these cultural resources are considered. The purpose of this report, then, is to provide in one document a comprehensive summary of previous work to identify and evaluate the cultural resources in the NOV Area and to recommend the next steps for treating these cultural resources. In this way the NOD-COE is fulfilling the spirit and intent of the federal legislation for cultural resources. The large and comprehensive scope of these purposes requires several, more specific activities. They are:

1. Review and evaluate all previous cultural resource management projects conducted in areas affected by the NOV. The guidelines for cultural resource surveys issued by the Department of the Interior are the major evaluation criteria.
2. Prepare recommendations for completing cultural resource identification in the NOV Area.
3. Review all currently recorded cultural resources in the NOV Area.
4. Cultural resources within the direct and/or indirect impact areas of the NOV are evaluated for eligibility for nomination to the National Register of Historic Places (NRHP). Evaluation is made using the criteria for evaluation listed in 36CFR60.4.
5. For cultural resources evaluated as eligible for nomination to the NRHP, recommendations are made for their appropriate treatment.
6. Three National Historic Landmarks will be affected by the NOV. These are: Fort De La Boulaye (16PL27), Fort Jackson (16PL38), and Fort St. Philip (16PL39). Recommendations are made concerning management options and treatment of these cultural resources.

NOV AREA LOCATION

The NOV Area is an arbitrarily-defined boundary surrounding those areas that will be either directly or indirectly affected by the land altering activities associated with the NOV. This boundary is defined as all land along the natural levee on the west bank of the Mississippi River from Happy Jack, Louisiana to Venice, Louisiana and along the natural levee on the east bank of the Mississippi River from Phoenix, Louisiana to Baptiste Collette Bayou. The area includes and is bisected by the Mississippi River and bounded to the northeast and southwest by fresh, brackish, and salt marsh. Major open water bodies adjacent to the NOV Area include Black Bay, California Bay, and Quarantine Bay. To the west are Adams Bay, Bastian Bay, and Barataria Bay. The Gulf of Mexico is south and west of the NOV Area (Figure 1).

All property within the NOV Area, with the exception of the Bohemia Wildlife Management Area, is privately owned. The Bohemia Wildlife Area is managed by the U.S. Fish and Wildlife Service. The portion of this property within the NOV Area extends downriver on the west bank from Bohemia to Ostrica Lock. The Mississippi River in this area is managed by the NOD-COE.

HISTORY OF THE NOV

The NOV was authorized under the Flood Control Act of 23 October 1962, House Document 550, 87th Congress, 2nd Session, for improvement of existing back levee systems. The project was originally called "Mississippi River Delta at and below New Orleans" (U. S. Army Corps of Engineers Project Maps 1985:2-32A). This flood control act called for the construction of flood barriers as recommended by the Chief of Engineers (House Document No. 550, 87th Congress, 2nd Session). The purpose of the NOV is "to provide protection from hurricane tidal overflow by increasing the heights of the existing back levees and modifying the existing drainage facilities, where necessary" (U. S. Army Corps of Engineers Project Maps 1985:2-32A). In general, the Flood Control Act authorized the construction of new levees as well as increasing the height and base of existing levees.

The NOV involves the enlargement of the locally constructed back levee on the west bank from City Price to Venice, bringing the existing levee on the east bank from Phoenix to Bohemia up to grade, and the construction of the East Bank Barrier Levee from Bohemia to Baptiste Collette Bayou (10 miles AHP). The NOV is separated into four "reaches" (termed A, B-1, B-2, and C) and two barrier levees: the East Bank Barrier Levee and West Bank Barrier Levee (Figure 1).

The four reaches will be constructed in three stages, or "lifts." A lift involves the deposition of fill on the existing levee top and flank to a required height and grade. Each is described below.

Reach A

"Reach A of the New Orleans to Venice Hurricane Protection Levee is located parallel to and ranging from about 0.25 to 1 mile west of the left ascending bank of the Mississippi River, extending approximately from City

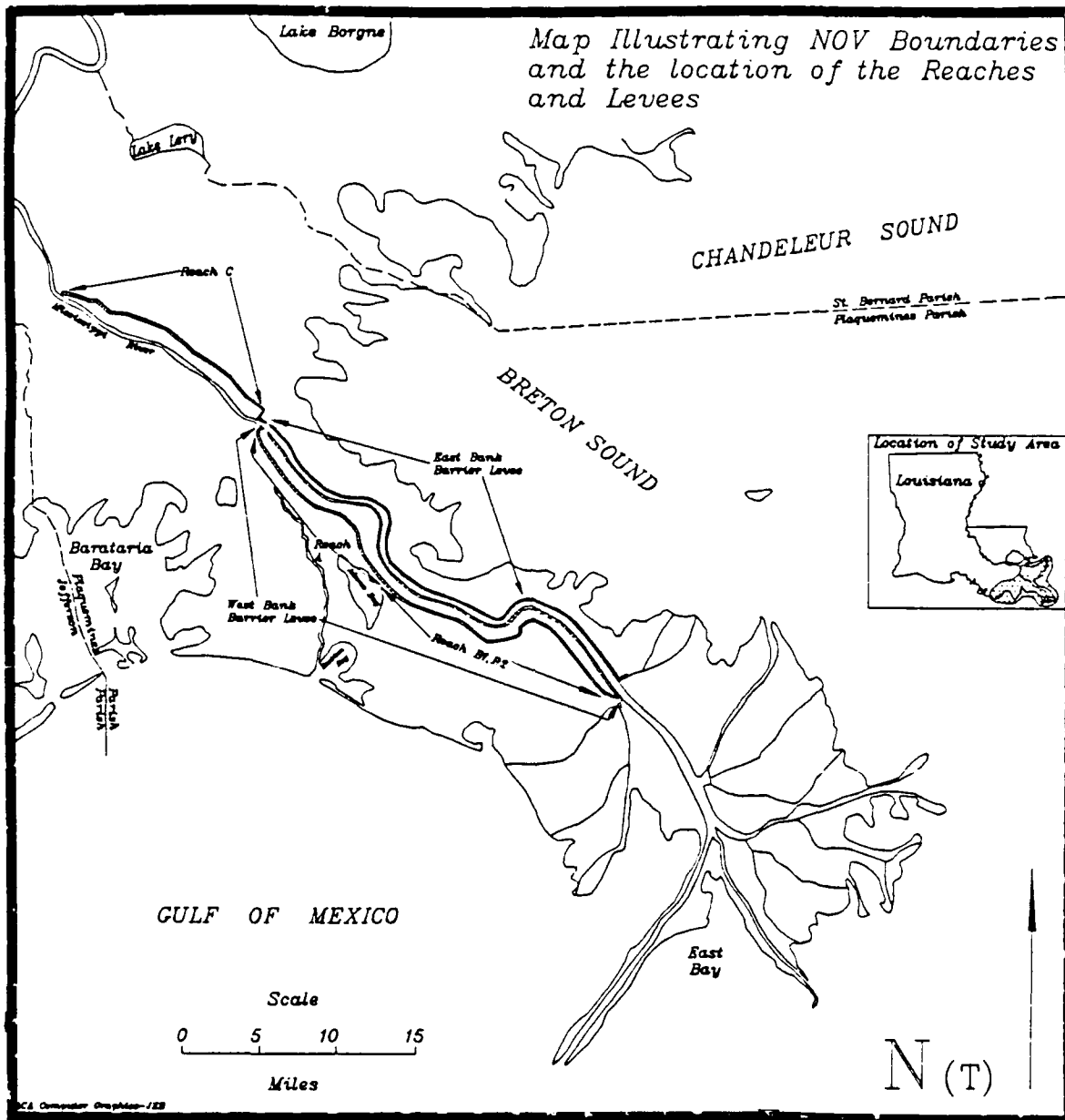


Figure 1. Map illustrating the NOV Area boundaries and the locations of the reaches and levees.

Price to Tropical Bend, Louisiana (River miles 30.4 to 44.9)" (Davis et al. 1978:2). The project involves the enlargement of an existing back levee. Reach A is in place (personal communication, James E. Chase, NOD-COE, March 1987).

Reach B-1

This project began in 1969. It involves the enlargement of an existing levee. In May 1969, 9,800 feet of the first levee lift of Reach B-1 (Tropical Bend to Empire Floodgate) was completed. The second lift of Reach B-1 was completed in June 1973. The levee enlargement between Tropical Bend and Empire was completed in April 1978 and the section between Empire and Fort Jackson was completed in May 1978 (Muller and Flayharty 1982:n.p.). Reach B-1 is 97% complete. The project is expected to be completed by September 1989 (U. S. Army Corps of Engineers Project Maps 1985:2-32A).

Reach B-2

This project involves the enlargement of an existing levee. The first lift between Fort Jackson and Duvic (28,000 feet) in Reach B-2 was completed in August 1977 (Muller and Flayharty 1982:n.p.). The remaining section of Reach B-2 first lift was completed in April 1978 (Muller and Flayharty 1982:n.p.). Reach B-2 is 80% complete and is expected to be finished by September 1991 (U. S. Army Corps of Engineers Project Maps 1985:2-32A).

Reach C

This project involves the enlargement of an existing levee between Phoenix and Bohemia (a distance of 16 miles). Reach C was constructed to grade by local interests. The levee design grade between Davant and Bohemia was completed in 1975. Only 80% of the Reach C project plan has been completed. It is expected that the enlargement will be completed by September 1993 (U. S. Army Corps of Engineers Project Maps 1985:2-32A).

East Bank Barrier Levee

The East Bank Barrier Levee Project plan involves the construction of a main line levee on the existing natural levee on the east bank of the Mississippi River. Construction will take place from Bohemia south to Baptiste Collette Bayou (mile 10 AHP), a distance of 34 miles. The East Bank Barrier Levee is not complete. Construction plans for the project have been cancelled at present.

West Bank Barrier Levee

The West Bank Barrier Levee Project plan involves the enlargement of an existing main line levee on the existing natural levee along the west bank of the Mississippi River from Happy Jack to Venice. Material from adjacent borrow areas and borrow areas along the east bank of the Mississippi River will be used to build the levee. Enlargement of the West Bank Barrier Levee is expected to be finished by September 1999 (U. S. Army Corps of Engineers Project Maps 1985:2-32A).

SCOPE OF WORK

The Scope of Work that guides this report was modified from the Scope of Services for the Southeast Louisiana Cultural Resource Management Plan

and Final Report for the New Orleans to Venice Hurricane Protection Project, Delivery Order No. 0001, Contract No. DACW29-86-D-0094, Department of the Army, New Orleans District, Corps of Engineers (see Appendices A and B). In the original Scope of Services, we were required to compare and contrast previous surveys and sites against the regionally-oriented Southeast Louisiana Cultural Resource Management Plan (SELCRMP) and then provide recommendations based solely on the evaluatory criteria presented in the SELCRMP (Appendix A:7). In addition, a comparative cost-productivity analysis of cultural resource surveys in the NOV Area was made. A draft was completed and submitted to the NOD-COE. However, because of rescheduling, additional modifications in the original Scope of Services for the SELCRMP, and time constraints imposed by construction schedules, it was determined impossible to obtain Advisory Council on Historic Preservation (ACHP), and State Historic Preservation Officer (SHPO) approval of a Memorandum of Agreement (MOA) for the regional management plan and submit the report for the NOV in time to meet construction deadlines. Instead a revised document, as presented herein, that did not utilize the SELCRMP criteria was specified.

PROJECT EFFECTS

The terms "direct and indirect effects" of the NOV are derived from 40CFR1508.8. Direct effects refer to effects "caused by the action and occur at the same time and place" (40CFR1508.8). Indirect effects are those effects "caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable" (40CFR1508.8). With the exception of the East Bank Barrier Levee, all levees are in place. The proposed activity at all areas except the East Bank Barrier Levee consists of raising and widening the existing levees. The proposed East Bank Barrier Levee has not been built.

Direct effects of the NOV on cultural resources include potential destruction of all or part of the cultural resources within the areas of levee enlargement and new levee construction. The areas of impact include those where new levee is constructed, areas where the levee will be expanded horizontally onto undisturbed land, areas where heavy equipment traffic is allowed into undisturbed land outside the existing levee, and areas where soil is excavated for fill. Additionally, because of the nature of the sediments in the NOV Area, vibrations from construction activity near sites with structures may cause damage to structure foundations. While often not immediately visible, this type of impact may cause long term detrimental effects to the entire structure. The additional height of the levee may also be considered an effect in that it may isolate the properties from their surrounding environment (36CFR800.9(b)).

The indirect effects of the NOV are related to its primary purpose of hurricane protection. While the project will protect cultural resources behind the levee on the west bank of the river from hurricane-induced water surges, it may also serve to focus these surge waters into areas on the east bank and along the batture on the west bank that contain sites. Impacts at these locations may include destruction, burial, and deflation. Beneficial direct and indirect effects of the NOV include increased protection of cultural properties from hurricane and flood generated water surges.

For detailed locational information on the proposed NOV impacts refer to Appendix D of this document. Appendix D consists of current (to 1983) engineering plans for rights-of-way and borrow areas associated with the NOV.

PREVIOUS CULTURAL RESOURCE MANAGEMENT PROJECTS

Thirty-one cultural resource management studies have been conducted in areas affected by the NOV. Of these, five cultural resource survey and testing projects have been conducted for the NOD-COE, specifically as part of the NOV. Table 1 presents the dates of work, project type, and project location. Detailed narrative descriptions of these projects are presented later in this document within Chapter IV. Only general aspects of those projects are provided here.

CONTRACTING INSTITUTION

This report was prepared by the Agency for Conservation Archaeology (ACA), Eastern New Mexico University (ENMU), Portales, New Mexico. The work performed under this project consisted solely of archival data searches, and limited aerial and surface reconnaissance. No Federal or Louisiana State permits were required.

The principal personnel involved in this project and their institutional affiliation are as follows: Contracting Officer's Authorized Representative - James E. Chase, NOD-COE, Ph.D., Anthropology; Principal Investigator - John L. Montgomery, ACA-ENMU, Ph.D., Anthropology; Project Manager - Keith Landreth, ACA-ENMU, M.A., Anthropology; Project Archeologist - Joan M. Exnicios, ACA-ENMU, M.A., Anthropology; Project Historians - Sam Hyde, Jr., ACA-ENMU, M.A., History; and John Nolan, ACA-ENMU, ABD., History.

DISPOSITION OF RESEARCH MATERIALS

All research materials obtained during preparation of this document are currently curated at ACA-ENMU in Portales, New Mexico. Upon acceptance of the final report by the NOD-COE, these data will be delivered to the NOD-COE for final deposition.

SUMMARY

This chapter has introduced the NOV, its purpose, and the individuals who have shared in the production of the report. Chapter II presents an environmental background for the NOV Area. The culture history of the NOV Area and vicinity is outlined in Chapter III. Chapter IV is a synopsis of cultural resource projects conducted within the NOV Area. For clarity, this information is provided in both narrative and tabular form. The project research design is discussed in Chapter V. Chapter VI contains narrative descriptions of cultural resources recorded within the NOV Area. In Chapter VII the environmental, archeological and historical information is presented as a context for future research orientation and for evaluation of cultural resources within the NOV Area. All previous cultural resource surveys and sites are evaluated against federal guidelines for site evaluation in Chapter VIII. Options are given for

Table 1. Cultural Resource Projects Conducted for the NOV.

Date	Author	Institution	Project Type	NOV Location
1978	Davis et al.	Tulane University	Reconnaissance and Pedestrian Survey	Reach A
1981	Davis et al.	Tulane University	Reconnaissance and Pedestrian Survey	East Bank Barrier Levee and West Bank Barrier Levee from Venice to Fort Jackson
1982	Muller and Flayharty	NOD-COE	Reconnaissance and Pedestrian Survey	Reach B-1, B-2, and C
1986	Jeter and Goodwin	Goodwin and Associates	Reconnaissance Pedestrian and Testing	Reach C in Phoenix and along Gravolet Canal
1986	Goodwin et al.	Goodwin and Associates	Reconnaissance and Pedestrian Survey	Reach C

management of those cultural resources recommended or determined as significant under 36CFR60.4. The last chapter (Chapter IX) presents recommendations for completing cultural resource compliance-related activity for the project. Separate appendices for the Project Scope of Services and modifications to the Scope of Services are presented as Appendices A and B, and State of Louisiana Site Forms for cultural resources within the NOV Area and engineering maps for the NOV projects are presented as Appendices C and D. Separate research designs, along with specific recommendations for mitigation at the three National Historic Landmarks are presented as Annexes A, B, and C. Annex D presents research designs for Phase I mitigation of other adversely affected cultural resources that are recommended eligible for the NRHP.

II. EXTERNAL ENVIRONMENTAL PARAMETERS

Many cultural or social activities are influenced by variables in the physical environment. It can be said that the combined major elements of the environment serve to structure cultural activities in a relatively broad sense. The physical environment contains elements basic to human existence, such as potable water, and a variety of plant and animal species that serve as resources for food, clothing, and shelter. The level of technology is affected, to some extent by the resources available, while simultaneously, the level of resource exploitation is related to the level of technology employed by any given human group. Therefore, any realistic evaluation of cultural resources by an archeologist must consider the environmental context in which they are found.

The environmental context also provides information that can account for the condition of cultural materials in the assemblages examined by archeologists today. Buried deposits of cultural material are less likely to have suffered incidental damage from natural processes than eroded surface deposits. The depositional environment of the specific locale of a cultural resource site bears directly upon the preservation of cultural materials. The durability of the items themselves, of course, relates as much or more to the culture as it does to the environment. The following presentation of the environmental context of the NOV Area is structured to accommodate both sets of considerations.

This chapter of the report is primarily a description of the modern environment of the NOV Area. Although paleoenvironmental information is available for the southeast in general, it cannot be applied specifically to the NOV Area. This part of the Mississippi River delta is rather young geologically, and climatic conditions, flora, and fauna in the past are not believed to be significantly different from what existed in the area historically (Iroquois Research Institute 1982:10). The structure of this section includes discussions of the physical features (e.g., topography, hydrology, geology), and the climate, flora, and fauna of the NOV Area.

PHYSICAL FEATURES

Topography and Soils

The NOV Area is located within the modern Mississippi River delta. Several topographic situations exist within the project area, all of which are related to the delta and its formation. Three topographic situations occurring within the NOV Area are repeatedly mentioned as being important for prehistoric and historic site location. These are the present natural levee of the Mississippi River, natural levees on distributary streams away from the river, and locales near the mouths of active distributaries (Figure 2).

Almost the entire project area is situated along and within the natural levee ridge of the recent Mississippi River channel. A natural levee is:

a long, broad, low ridge or embankment of sand and coarse silt, built by a stream on its flood plain and along both banks of its channel, especially in time of flood when water overflowing the normal banks is forced to deposit the coarsest part of its load [American Geological Institute 1972:474].

The resultant landform parallels the water channel and consists of a wedge-shaped deposit that thins away from the channel. The highest elevation on the levee surface is adjacent to the parent channel at or near normal flood level and the surface slopes gently away from the channel and toward the surrounding environments (American Geological Institute 1972:474). Natural levees are characterized by better drainage than surrounding areas, and the resulting change in vegetation provides the best means of identification on false-color infrared aerial photographs (Smith et al. 1986:11).

In deltas, streams often diverge from the parent channel. The point of diversion is initiated as a crevasse channel, but if it becomes enlarged to the point that flow becomes permanent rather than ephemeral, then the resultant channel is known as a distributary channel. Distributary channels generally terminate in a large body of open water, "typically diverge from the main channel at low angles (usually less than 60 degrees) and may carry a substantial amount of flow (20 to 40 percent) from the main channel" (Smith et al. 1986:14). Distributaries may have many of the fluvial features associated with the trunk stream, including natural levees, crevasses, and splays.

The NOV Area contains numerous crevasses and splays along both the main course and distributaries. A crevasse is "a wide breach or crack in the bank of a river or canal; especially one in a natural levee or an artificial bank of the lower Mississippi River" (American Geological Institute 1972:165). Crevasses develop by breaching of natural levees during floods and are ephemeral, usually only receive flow during high discharge periods, and usually are accompanied by the development of broad natural levees (Smith et al. 1986). Crevasses often terminate distally in accumulations of coarse-grained sediments known as crevasse splays. Splays are characterized by a fan or semi-elliptical shape and have numerous anastomosing, or interconnecting, smaller channels, that radiate outward in all directions.

Point bars within the NOV Area are situated below Homeplace, on the west bank of the Mississippi River and on the east and west banks at Fort St. Philip and Fort Jackson. Point bars are lateral accretion deposits formed on the insides of stream meanders. In a meandering channel, maximum velocity is directed toward the outside of the meander; consequently, water tends to be deeper and erosion is concentrated in that area. On the inside of the meander, water tends to be shallower, the current slower, and deposition prevails. Over a period of time a series of ridges of coarser sediment tends to develop on the inside of a growing meander. The resultant ridge and swale topography on the deposits is characterized by alternating better drainage on the ridges and poor drainage in the swales.

A significant portion of the NOV Area consists of marsh environments. These environments are characterized as extremely flat, largely treeless areas dominated by grasses and sedges with standing water. Vegetative debris is added at the surface and normally keeps pace with subsidence so that a thick organic deposit eventually forms (Kolb and Van Lopik 1958). Smith et al. (1986) note that peats are the most common forms of marsh strata, although inorganic sediments may be introduced by flooding and by unusually high tides. Three types of marsh are present in the NOV Area: fresh, brackish, and salt (Chabreck and Linscombe 1978).

Five different soil associations have been identified within the NOV Area and are delineated on environmental inventory maps prepared for the NOD-COE by the Engineer Agency for Resources Inventories (EARI) (1975:176). Along the natural levees of the Mississippi River the two soil associations identified are the Commerce-Convent association and the Sharkey-Convent-Commerce association. Both of these are composed of loamy Mississippi River bottomland soils; however, the former are protected by levees while the latter are not. In the swamps and marshes, three soil associations have been identified. They are the Sharkey-Fausse-Barabary association, described as "firm and semifluid clayey and mucky swamp land subject to flooding", the Medisaprists-Hydraquents-Fluvaquents association, described as "semifluid organic and mineral soils in salt water marsh, subject to flooding", and the Medisaprists-Fluvaquents association, described as "drained mineral and organic soils of the swamp and fresh water marsh" (EARI 1975:176).

Geomorphology, Geology, and Hydrology

Through the years differing hypotheses on the evolution of the Mississippi River delta have developed. The realization has developed that, rather than three or four relatively simple lobes, there are at least five delta complexes, each of which has a complement of smaller lobes. Earlier interpretations of delta dynamics have given way to the realization that these deltaic facies record an extremely complex and incompletely understood geomorphic history.

The modern Mississippi River Delta is one of the largest and most complex deltas in the world. The Mississippi drains an area of 3,344,560 km² and has an average discharge of 450,000 cubic feet/second (cfs), ranging from average low-water flow of approximately 300,000 cfs to flood stage discharges exceeding 1,000,000 cfs (Morgan 1977:45). Sediment discharge is estimated at 300,000,000 tons annually (Morgan 1977:45). The sediment load is composed of clay, silt, and sand, with 70% being clay (Coleman 1982).

The Mississippi River has delivered sediment to the Gulf of Mexico since at least Cretaceous times. Since that time, the depocenter has shifted many times. Much of the sediment in the Gulf Coast syncline is partly derived from the ancestral Mississippi River. As the river deposited sediment to the Gulf, it built up a thick sequence of sediments that prograded the coastal plain in a seaward direction, forming the Mississippi River Delta. Coleman (1982:28) estimated the present delta at 28,568 km², of which 23,900 km² is subaerial. The subaerial portion of the delta has decreased due to increased subsidence since these figures were generated.

The early Mississippi delta prograded and constructed lobes on the western flanks of the present Mississippi deltaic plain. These lobes were generally widespread and thin, averaging 10-15 m in thickness. As the lobes prograded, resulting in a reduction of the river's gradient, the channel shifted to more favorable positions (avulsion), resulting in an eastward shift of the depocenter through time. Avulsion has occurred a number of times on the Mississippi River delta, resulting in the deposition of multiple delta complexes, each reflecting a different position of the lower Mississippi River. Five such complexes have been identified (Frazier 1967). From oldest to youngest, these are the Maringouin, Teche, St. Bernard, Lafourche, and Plaquemines-Modern complexes. These delta complexes have all been deposited in the last 12,000 years (Figure 3).

The hyperpycnal flow of the modern Mississippi has produced a delta complex different from the previous deltas of the Mississippi River. The elongate, confined birdsfoot shape of the modern delta is the result of a radical expansion in vertical thickness owing to deposition in increasingly deeper water. Whereas the average thickness for all known previous Mississippi delta deposits is approximately 20 m, the modern delta is 100-120 m thick. The difference in water depth has resulted in construction of a delta having a much smaller subaerial extent. The modern birdsfoot delta is confined to a relatively small area of 1,900 km², where older deltas average 6,200 km² (Coleman 1982:57).

Upon abandonment of a distributary due to loss of gradient advantage, a shift in the site of active delta sedimentation (depocenter) occurs, a new lobe is constructed, and the inactive delta lobe is soon attacked by subsidence and the sea (marine transgression) as sedimentation ceases. Each delta lobe proceeds through a life cycle (Coleman 1982) and successive lobes have been modified to varying degrees depending on their age. Each of the five major delta complexes (Frazier 1967) is further divided into a series of lobes representing episodes of delta building lasting from 100 to 1500 years. Deposits of one of these complexes, the Plaquemines-Modern, form the surface in the NOV Area.

The history of delta construction described by Frazier (1967) has been paraphrased in most works completed since publication of his classic article; consequently only an outline will be presented here. Initial deposition of the St. Bernard complex began approximately 4,700 years ago, when the Mississippi River shifted from the Teche course to the west. Approximately 4,100 years ago initial progradation of the Bayou Terre aux Boeufs lobe toward the southeast began to occur. Approximately 3500 B.P., delta construction was focused in the Bayou Terrebonne lobe of the Lafourche complex and the Bayou des Familles lobe of the St. Bernard complex. Frazier states that these lobes were active until approximately 2000 B.P., although Gagliano et al. (1978) believe that the Bayou des Familles lobe may have remained active longer.

At approximately 3000 B.P. a portion of the deposition shifted eastward into the St. Bernard complex, forming the Mississippi-LaLoutre lobe in the period approximately 3000 B.P.-2300 B.P., an unnamed lobe, from approximately 2500 B.P.-1800 B.P., and the Bayou Sauvage lobe that was active in the period of approximately 1850 B.P. to 600 B.P. The Bayou

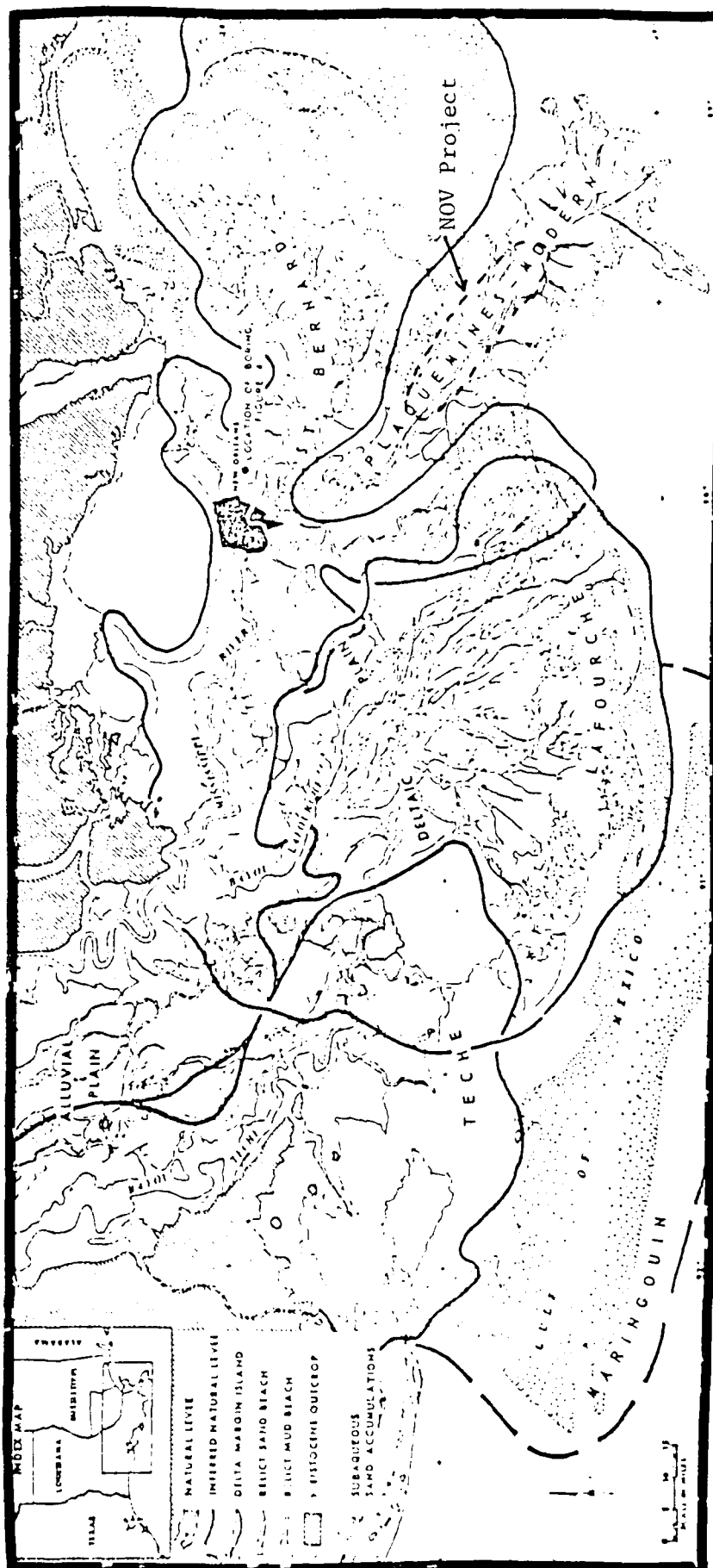


Figure 3. Map of the Mississippi River Delta showing the five major delta complexes delineated by Frazier (1967). The study area is outlined by the dashed lines. (From Frazier 1967:289, Figure 1).

Blue lobe of the Lafourche complex, though apparently receiving a large portion of the Mississippi River flow, was active only from the period between approximately 2000 and 1900 years B.P. In the Lafourche complex, the Bayous Lafourche and Terrebonne lobe became active about 800 years ago, preceded slightly by the Mississippi river lobe of the Plaquemines-Modern complex that became active approximately 1000 B.P. Sedimentation continued into modern times in both the Lafourche and Plaquemines-Modern complexes through the Bayous Lafourche and Terrebonne lobe of the Mississippi River lobe. The Bayou Lafourche lobe of the Lafourche complex became active about 300 B.P., followed slightly later by an unnamed lobe of the Plaquemines-Modern complex.

The Balize or Modern delta is markedly different from prior deltas. Its elongate, confined birdsfoot shape is the result of a radical expansion in vertical thickness. Although avulsion and construction of multiple lobes is still a characteristic, deposition in deeper water has resulted in the construction of much smaller and more temporary lobes.

In summary, of the delta complexes discussed, deposition first occurred to the east in the St. Bernard complex, was divided between the St. Bernard and Lafourche complexes from about 3500 B.P.-1000 B.P., and then divided between the Lafourche and Plaquemines-Modern complexes during the period 1000 B.P. through today. The NOV Area is situated entirely within the Plaquemines-Modern complex.

CLIMATE

The climate in the NOV Area is classified as humid subtropical (Kniffen 1968). This classification is characterized by warm summers and mild winters with abundant precipitation throughout the year and a long growing season. Average annual temperature in the NOV Area is 70⁰ F and average annual precipitation is 63 inches (Ruffner 1978). Table 2 illustrates temperature and precipitation averages by month for New Orleans (some 15 miles north of the NOV Area).

Two major climatological influences in the NOV Area are rain and wind. December through March is the rainy season for this area. Flooding occurs along the Mississippi River in the spring due to melting snow (to the north) and heavy rains. Summer flooding occurs during the almost daily thunderstorms. Average annual wind speed has been reported as 8 mph. However, this can change significantly due to thunderstorms, hurricanes, tropical storms, and tornadoes. Hurricanes and tropical storms occur usually in the summer and fall. Tornadoes usually occur during February to May. Fog may exist in late winter and spring, forming from the cold flow of the Mississippi River upstream.

FLORA

According to maps prepared by EARI (1975), most of the NOV Area is classified as non-forested wetland, or marsh. The remainder of the NOV Area is classified as either deciduous forest or crops and pasture. The deciduous forest is divided into two components, bottomland forest and swamp forest, both of which occur in the NOV Area. The marsh vegetation is categorized by the degree of salinity of the water (saline, brackish, intermediate, or fresh).

Table 2. Mean Precipitation and Temperature Information
for New Orleans, Louisiana, 1931-1955.¹

	Average Temperature (°F)	Average Precipitation (inches)
January	54.9	4.68
February	57.4	3.97
March	61.7	5.90
April	68.3	5.40
May	74.6	5.54
June	80.5	5.63
July	81.1	5.89
August	82.2	5.64
September	79.5	5.06
October	71.4	3.18
November	60.9	4.09
December	56.1	4.67
Annual	69.1	59.65

¹ Adapted from Ruffner 1978:415.

Bottomland forest types that may be present in the NOV Area include swamp tupelo (Nyssa aquatica), sweetgum (Liquidambar styraciflua), eastern cottonwood (Populus deltoides), overcup oak (Quercus lyrata), water oak (Quercus nigra), nuttall oak (Quercus nuttallii), black willow (Salix nigra), sycamore (Platanus occidentalis), ash (Fraxinus sp.), red maple (Acer rubrum), box elder (Acer negundo), cherrybark oak (Quercus pagoda), and bitter pecan (Carya lecontei). Swamp forest types are bald cypress (Taxodium distichum) and swamp tupelo (Nyssa aquatica). These are only some of the types that may be present. A more complete list of vegetation appears in the environmental inventory maps prepared for the NOD-COE by EARI (1975).

Fresh-water marsh vegetation that may be present in the NOV Area includes maiden cane (Panicum hemitomon), water pennywort (Obolaria virginica), water hyacinth (Eichhornia crassipes), and pickerelweed (Pontederia cordata). Intermediate types include wiregrass (Spartina patens), deer pea (Vigna luteola), Walter's millet (Echinochloa walteri), and sawgrass (Cladium jamaicense). In brackish-water marshes vegetation present may include three-square (Scirpus olneyi) and coco (Scirpus robustus). Vegetation types from saline areas include oystergrass (Spartina alterniflora), black rush (Juncus roemerianus), black mangrove (Avicennia germinans), and spikegrass (Distichlis spicata).

FAUNA

The marsh habitat supports many different types of mammals, birds, amphibians, reptiles, fish, and shellfish. Ungulates such as the white-tailed deer (Odocoileus virginianus) are common to this area. Other mammals found in this habitat include gray squirrel (Sciurus carolinensis), swamp rabbit (Sylvilagus aquaticus), Virginia opossum (Didelphis virginiana), and northern raccoon (Procyon lotor megalodontus). Mammals important to the fur trade are also found in this habitat and include the common muskrat (Ondatra zibethicus), the nutria (Myocastor coypus), otter (Lutra canadensis), and mink (Mustela vison).

Aquatic birds are very common in the wetland environment. Typical species that may be observed in the NOV Area include loons (Gaviidae), grebes (Podicipedidae), cormorants (Phalacrocoracidae), darters (Anningidae), heron (Ardeidae), stork (Ciconiidae), duck (Anatidae), crane (Gruidae), sandpiper (Scolopacidae), gull (Laridae), oystercatcher (Haematopodidae), skimmer (Rynchopidae) and stilt (Recurvirostridae). Two species which were common but have become rare are the Canada goose (Branta canadensis) and the brown pelican (Pelecanus occidentalis). This list is not inclusive, a more complete listing may be found in the environmental inventory maps prepared for the NOD-COE by the EARI (1975).

The marsh environment forms a complex estuarine habitat which is important to the production of fish and shellfish. The fishing industry is vital to this part of Louisiana. Species be found in the NOV Area include blue crab (Callinectes sapidus), shrimp (Palaemonidae), oyster (Crassostrea virginica), spot (Leiostomus xanthurus), and seatrout (Cynoscion sp.).

III. CULTURAL PARAMETERS

The NOV is located along the east and west banks of the Mississippi River in Plaquemines Parish, Louisiana. The following overview discusses the culture history of the area at both regional and NOV Area levels to provide an appropriate historical context for understanding and evaluating the cultural resources within the NOV Area.

BACKGROUND DATA SOURCES

In preparing this document, sources consulted for environmental and cultural resource management data included local and regional libraries, the National Register of Historic Places (Washington, D.C.), the Louisiana State Historic Preservation Office, Division of Archaeology (Baton Rouge), and the NOD-COE. Also utilized were the major collections of historic materials in the area. These include the Earl K. Long Library at the University of New Orleans, the Howard Tilton Memorial Library at Tulane University, the Loyola University Library, the New Orleans Public Library, the Historic New Orleans Collection, the Louisiana State University Library and Archives in Baton Rouge, and the Louisiana State University Cartographic Information Center, also in Baton Rouge.

Each of these collections made useful and unique contributions to this project. The Howard Tilton Memorial Library at Tulane University has a large constantly updated assemblage of historical materials in their Louisiana collection. This library also has numerous other collections that have been used, including an extensive rare book and manuscripts collection, a good collection of Louisiana newspapers on microfilm, and a wide selection of Louisiana historic maps.

The New Orleans Public Library proved valuable for its extensive collection of local newspapers and other documents relating to the city. While not actually in the NOV Area, New Orleans dominates much of the history of the NOV Area. In a similar fashion, the library of the Historic New Orleans Collection on Royal Street contributed greatly to our knowledge of the region. The Historic New Orleans Collection also houses two other departments that were thoroughly investigated: the Curatorial department and the Manuscripts division. In the first of these, literally hundreds of maps and drawings were documented, while in the second a large collection of French and Spanish colonial documents, previously only available in Paris and Madrid, can now be reviewed on microfilm.

In Baton Rouge, the Louisiana State University Library and Archives includes a massive collection of historical material, housed separately from the main library. The main library of the university was particularly useful because of its large collection of master's theses and doctoral dissertations. Also found on the campus of Louisiana State University is the Cartographic Information Center, which houses the most extensive and well organized collection of historic maps in the region.

Other libraries and collections in the area, including the Louisiana History Collection of the Earl K. Long Library at the University of New Orleans, and the Loyola University Library proved to be particularly

useful in obtaining church-related documents. As a group, these collections tended to supplement rather than duplicate each other.

REGIONAL CULTURE HISTORY

Prehistoric Background

Despite research initiated as early as the first decade of the twentieth century (Moore 1913) in southern Louisiana, the region's prehistoric cultural history is incompletely known. The major problems with regional interpretation are best discussed by Gibson (1982). Major problems include a paucity of major excavations within the area, few reliable radiometric dates, inadequate survey methodologies, the lack of studies utilizing geomorphic, palynological, and paleontological data in archeological research, and the imposition of a ceramic seriation scheme derived primarily from early studies conducted north and east of southern Louisiana (Gibson 1982:313-314). These shortcomings may make any correlation of information misleading. Though it may be imperfect, it is the background currently accepted for prehistoric cultural development within the area.

Southern Louisiana has been occupied by humans for the last 12,000 years. The regional archeological record indicates three major periods of distinctive cultural adaptation. The first began as early as 12,000 B.P. (10,000 B.C.) with the Paleoindian period. The second was a period of adaptation characterized by four major cultural units designated the Archaic, Poverty Point, Tchefuncte, and Marksville cultures. Around A.D. 700, there appears to have been a major shift in subsistence strategies characterized archeologically by the introduction of the bow and the initiation of large-scale maize agriculture. Labelled the Troyville, Coles Creek, and Plaquemine cultural units, this system of adaptation was to last well into the time of contact with the Europeans.

Work conducted by Walker, James A. Ford, and Fred Kniffen in the 1930s; Phillips, Ford, and Griffin's 1951 survey of the lower Mississippi alluvial valley (Phillips et al. 1951); and Phillips' survey of the Lower Yazoo Basin in 1949-1955 (Phillips 1970) are the foundations for the current understanding of the region's prehistory. Smith et al. (1983) and Neuman (1984) provide the most recent summaries of the region's archeological record. In its essential details, their overview is followed here.

The prehistoric cultural units discussed in this overview are derived from the Louisiana CAP (Smith et al. 1983). While controversy may exist pertaining to specific dates and period subdivisions, these basic units are regionally accepted. These are as follows:

- Paleoindian Period (10,000-6,000 B.C.)
- The Archaic Period (6,000-2,000 B.C.)
- Poverty Point (2,000-500 B.C.)
- Tchefuncte (500 B.C.-A.D.100)
- Marksville (A.D. 100-400)
- Troyville/Baytown-Coles Creek (A.D. 400-1100)
- Plaquemine-Caddo-Mississippian (A.D. 1100-1540)

Paleoindian Period (10,000-6,000 B.C.). The earliest occupation of the region is known as the Paleoindian period, estimated to have lasted from 10,000 to 6,000 B.C. In Louisiana, the Paleoindian is divided into two periods. In chronological order these are termed the Paleoindian and San Patrice/Dalton periods. The former is characterized by distinctive lithics and association with Pleistocene megafauna. Cultural reliance on megafauna may have included such extinct forms as the mammoth and the large *Bison antiquus*. The San Patrice/Dalton period appears to be a transitional stage marked by a different technological adaptation to changing Holocene environmental conditions. A shift toward more sedentary existence and reliance on a wider spectrum of small animals and wild plants for food is inferred to have occurred during this period.

Paleoindian remains appear comparatively late in Louisiana. It is currently believed that the Paleoindians in Louisiana inhabited sections of the coast that were later inundated by the melting of the ice caps and are still inundated by the waters of the Gulf of Mexico. On the coastal and upland terraces, the only evidence of Paleoindian occupations are usually isolated projectile points (Coastal Environments, Inc. 1977:322-323).

Archaic Period (6,000-2,000 B.C.). Widespread environmental changes occurred around 8,500 years ago as a result of a warming trend in the climate at the end of the Pleistocene. This trend triggered changes in precipitation patterns, stream flow regimes, sea levels, and biotic communities. The melting of the ice caps caused an increase in sea level, inundating the Louisiana coast for at least 250 miles inland. The vegetation in the area began to change from prairie to woodland communities and the megafauna that had lived in the area gradually became extinct.

In Louisiana, as elsewhere, the Archaic period is characterized by the adaptations the inhabitants made to these environmental and biotic changes. Human adaptations to the changing environment resulted in changes in the subsistence base, settlement patterns, and technological aspects of the existing cultures. The subsistence base changed as the inhabitants exploited smaller game and a wider range of flora. The increasing diversity of utilized resources led to the development of a more diversified and often more technically complex tool kit. At the same time, the growing differences in local adaptations led to an increase in the stylistic variation of tool types. Tools used in fishing, food processing and woodworking became more common, and the new tool assemblage included grinding stones, fishhooks, ground stone tools, dart points, and atlatls. The Archaic period is also characterized by an increase in the stylistic variety of projectile points. Many archeologists believe a system of seasonal movement developed as groups began a more organized exploitation of the diverse resource base.

Archaic sites in southeast Louisiana have been found on riverine terrace surfaces "in close proximity to scarps marking the alluvial valley margin of the river" and "along those reaches of streams where chert gravel is a common component of the bed load" (Coastal Environments, Inc. 1977:237). According to William Haag most Archaic sites have been found

in regions which have been exposed above high water or alluviation of rivers for more than 5000 years...such as remnants of Pleistocene age land protruding through the modern or recent alluvium. Most Archaic remains have been found inland from the low marsh lands on the upper terraces, older than 5,000 years [Haag 1965:287-288].

Several surface finds that were believed to be Archaic sites were located by Weinstein (1974) along the Amite river northeast of the NOV Area. The Amite River phase is a local name for the Archaic period in southeastern Louisiana.

Poverty Point Period (2,000-500 B.C.). The Poverty Point Period is characterized by a continuation of many of the cultural traits established in the Archaic Period with some new additions. The hunting, fishing, and gathering economy continued on into the Poverty Point Period. Several new traits appeared in the archeological assemblage, including chert micro-lithic tools, clay cooking balls, clay fertility figurines, steatite vessels, a more advanced lapidary technology, and small amounts of fiber-tempered pottery. The period is also known for its earthen mound construction. The type site for the Poverty Point Culture is the Poverty Point Site in northeast Louisiana.

The Poverty Point trade network was very developed, exhibiting exchange with areas as far as 700 miles away (Gibson 1982:29). "Trade materials were quite varied and derived from many areas of the eastern United States, including the Ouachita, Ozark, and Appalachian mountains and the Upper Mississippi Valley and Great Lakes" (Gibson 1982:29). Some of the material traded included copper, gray northern chert, galena, steatite, magnetite, hematite, Pickwick chert, quartz crystals, sandstone, and various other types of chert.

Poverty Point sites have been found along major rivers, junctions of lakes and rivers, or in coastal marshes in Louisiana, Mississippi, and Arkansas. Poverty Point sites usually are found in widely spaced clusters. According to Jon Gibson (1982:6), in the lower Mississippi Valley there were at least 10 population clusters linked together by major waterways. Most of the sites were found on the floodplain, valley walls, and delta region of the Mississippi River and along some of its major tributaries. Usually there is one site in each cluster that is larger and more complex than the other sites in the locality. The Poverty Point Culture is characterized as a hierarchy of settlements with hamlets, towns, and a major city (the Poverty Point site). Many of the larger Poverty Point sites are situated in transitional areas between two or more ecotones (Gibson 1974:19-20). In the northern section of the state, these larger sites were at sharp topographic breaks. However, in the coastal zone, the sites were located at minor elevational changes in similar ecological zones (Gibson 1980:323).

In southeast Louisiana there is a cluster of Poverty Point sites around the Pearl River estuary, north of Lake Pontchartrain and along the forming delta lobe. In 1963, Sherwood Gagliano and Roger Saucier

identified three Poverty Point sites in southeast Louisiana. These were Bayou Jasmine (16SJ2), Linsley (16OR40), and Garcia (16OR34). The Linsley site is believed to be situated on the banks of an old buried natural levee of a distributary of the Mississippi River, while the Garcia site is located on an old beach deposit (Gagliano 1963:16; Coastal Environments 1977:261). The largest Poverty Point site near the NOV Area is the Claiborne site in Hancock county, Mississippi. The Bayou Jasmine, Garcia, and Linsley sites are interpreted as satellite villages or special activities areas located "in the marsh and swamps of the surrounding coastal marsh" (Coastal Environments 1977:259). The Bayou Jasmine site appears to have been occupied in the summer months as a fishing, hunting, and gathering camp for alligator, rangia clams, fish, assorted mammals, waterfowl, and deer (Duhe 1976:43-47). Linsley is also believed to be a summer camp site. The remains of fish, muskrat, otter, raccoon, squirrel, deer, and fowl found there suggest a similar fishing, hunting, and gathering economy.

The Poverty Point Culture is well known for its earthen mound construction. Usually "the number and size of the works varied directly with village size and population" (Gibson 1982:7). The mounds and earthen embankments were usually arranged in oval or horseshoe-shaped pattern at the larger sites such as Poverty Point, Claiborne, and Jaketown.

Tchefuncte Period (500 B.C.-A.D. 100). For unknown reasons the Poverty Point culture underwent a period of decline, but the basic pattern of life in the southeast coastal area appears to have continued relatively unchanged. The Tchefuncte Period in the coastal area of southeast Louisiana was an outgrowth of the previous Archaic culture and was similarly oriented towards shellfish exploitation. An addition was the widespread use of pottery and the construction of small conical burial mounds at inland sites. The widespread use of ceramics to the material culture of these coastal groups appears to have created little change in the overall socio-cultural pattern.

Tchefuncte sites have been found on natural levees, terrace remnants, salt domes, cheniers, along lake shores and ridges that provided dry ground (Neuman 1982:14). According to Toth (in Neuman 1984), the majority of Tchefuncte sites are located on the banks of smaller streams in areas that have slack water (Neuman 1984:132). The Tchefuncte people lived in small scattered settlements in coastal Louisiana and in more settled villages along the inland bayous.

Tchefuncte subsistence was based on hunting, fishing, and gathering. The diet included deer, raccoon, alligators, fish, migratory birds, bear, and shellfish. The Tchefuncte people gathered plant foods such as grapes, plums, persimmons, acorns, and hickory nuts, and cultivated squash and gourds in small gardens (Neuman 1982:16).

Other similarities between the Tchefuncte and Poverty Point artifact assemblages include the use of smoking pipes, stone, bone, and antler spear points, ground stone tools, mortars, grinding stones, and various other butchering, hideworking, and woodworking tools. Dissimilarities include the absence of elaborate stone beads, pendants, and microlithic tools. The projectile point assemblage from this period is almost

typologically identical to that found in Poverty Point sites. Projectile point types included are the Gary, Delhi, Ellis, Epps, Motley, Macon, and Pontchartrain. The pottery was coiled with a poorly compacted clay or sand tempered paste. At first the pottery was plain but as the technology improved decorations appeared, including designs made by punctation, stamping, cord marking, pinching, and incising. Many of the pots had tetrapodal bases.

Marksville Period (A.D. 100-400). Presently, there are several different dates postulated for the beginning and end of the Marksville Period in Louisiana. Some of these include 0-400 A.D. (Coastal Environments, Inc., 1977) and 100 A.D.-400 A. D. (Neuman 1982:18,22).

The Marksville culture is the Louisiana manifestation of Hopewell. The type site for the Marksville period is the Marksville site in Avoyelles Parish. During this time period aboriginal groups began to settle in larger more permanent villages and to construct large burial mounds. Tchefuncte mounds were usually built in groups of two or more and contained several burials.

The artifact assemblage is characterized by stone effigy pipes, ear spools, copper and stone jewelry, and figurines. Exotic trade items found at these sites include copper, quartz, asphaltum, mica, and galena. Such materials indicate extensive interaction in the the Hopewell trade network. Projectile point types of the Archaic period are present, as well as those of the preceding Tchefuncte and Poverty Point Culture Periods. As in the preceding Tchefuncte period, a seasonal round of hunting, gathering, and fishing continued.

Marksville pottery was made from the local clays but were of Hopewellian style and shapes. These design elements include zoned decoration, broad line incising, and rocker stamping (Shenkel 1974:62). Some pots were even decorated with red pigment and stylized zoomorphic motifs (Neuman 1977:16). Some of the most distinctive designs consisted of curvilinear lines, rectilinear patterns of concentric loops, and raptorial birds.

Marksville settlement patterns are similar to Tchefuncte settlement patterns. Settlement was still concentrated in the Grand Lake and the Lake Pontchartrain area. Sites were located near streams and bayous in the southern part of the state. During the early part of the Marksville period the southern shore of Lake Pontchartrain was inhabited, as indicated by the shell midden remains which line the shore. In southeastern Louisiana, Marksville sites include the Gibson site in Terrebonne Parish, the Big Oak site in Orleans Parish, and the Coquille site in Jefferson Parish.

Baytown Period (A.D. 400-700 A.D. The ca. 300 year period between the Marksville Period and the Coles Creek Period is one of which very little known. This little known period is called Baytown or Troyville depending more upon a site's location within the state and the individual preference of the recorder than on any other clear distinctions. Troyville and Baytown are alternate names for a transitional period between Marksville

and Coles Creek in the Lower Mississippi Valley sequence. Unfortunately many archeologists have glossed over this period and grouped Troyville with Coles Creek. Further confusion is added when the period is labelled the Troyville\Coles Creek period.

Jon Gibson has summed up the confusing situation as follows:

The problem grew out of philosophical differences regarding ceramic complexes of that time; one position, championed by Ford, maintaining their transitional nature; the other espoused by Phillips, portraying their discontinuous, separate character [Gibson 1982:31].

Alternately, James Griffin (1967:187) believed that following the Marksville fluorescence there was a period of cultural decline.

The Troyville site at Jonesville, Louisiana is the type site for the Troyville period. The Troyville Period is mainly identified by certain ceramic types including Mulberry Creek Cord Marked, Churupa Punctated, Troyville Stamped, Marksville Incised, and Larto Red Filmed. These ceramic types are also found in sites dating to the later Coles Creek period.

It was during this period that the bow and arrow was introduced into southeast Louisiana. Maize agriculture is also believed to have been introduced at this time. Flat topped mounds were constructed during this period.

Coles Creek Period (A.D. 700-1100). The Coles Creek period corresponds to the late Woodland period and the beginning of the Mississippian period in the Southeastern United States. The Coles Creek period is characterized by large pyramidal mounds surrounding an open plaza. Smaller circular mounds that characterized the Marksville period were still present during the Coles Creek Period (Neuman 1982:22). Structures atop the mounds were usually of wattle and daub construction. While some individuals were buried in these mounds, the majority of the population was buried in village areas away from the main ceremonial mound(s) (Neuman 1982:23). In most cases, the village areas were located a mile or so from these ceremonial complexes.

The Coles Creek material assemblage included new varieties of pottery designs and clay tempered pottery. The designs indicate that there was extensive interaction with other groups living along the southeastern Gulf coast and appear to be clearly related to those used along the Florida coast (Smith et al. 1983:182-183; Davis 1984:219). Changes in lithic technology includes the introduction of small triangular projectile points.

The first documented evidence of maize and squash agriculture comes from this time period. Indians during the Coles Creek period cultivated not only maize and squash but also gourds, sunflower seeds, and lamb's quarters.

Plaquemine Period (A.D. 1100-1500). The Plaquemine Period followed the Coles Creek Period in the southern part of the Mississippi Valley. The Plaquemine Culture is believed to be a late or protohistoric development of the Troyville-Coles Creek period (Neuman 1984:258). This is evidenced by similarities in some pottery designs, as well as similarities with other types of artifacts (Neuman 1984:258). These include elbow-shaped clay pipes, clay ear ornaments, some projectile point types, and groundstone celts. Mound construction and mortuary practices during the Plaquemine period are also similar to the preceding Troyville-Coles Creek period.

As in the Coles Creek period, villages and mounds of the Plaquemine period were arranged around a central open plaza. The type site for the Plaquemine Period is the Medora site in West Baton Rouge Parish which was excavated by Quimby in 1951.

Quimby lists several traits as representative of the Plaquemine Period such as truncated pyramidal mounds surrounding a plaza (Quimby 1951). These mounds were usually constructed in several stages. The buildings on top of these mounds were at first circular and later developed into rectangular shaped structures.

A distinctive characteristic of the Plaquemine period is the brush technique used as a design element on pottery (Neuman 1984:258). Other distinctive traits include the occasional use of shell temper, handles on vessel rims, engraving, and the absence of stamped designs (Neuman 1984:259). Plaquemine Period ceramics included new designs such as Plaquemine Brushed, Australia Incised, Evangeline Incised, Evansville Punctate, Harrison Bayou Incised, Hardy Incised, L'Eau Noir Incised, Leland Incised, Manchac Incised, and Mazique Incised (a variety of Manchac Incised).

Plaquemine period sites are typically located on natural levees, areas good for habitation and cultivation (Neuman 1984:259). A survey conducted by Altschul (1978) along the coast in Terrebonne Parish indicated that during the early Plaquemine Period small groups would spend the spring and summer months in seasonal camps exploiting the riverine resources and in the fall and winter move into larger more permanent settlements. Later, many of these large villages were located on the natural levees of large streams.

Mississippian Period (A.D. 1200-1700 A.D.). The Mississippian Period is characterized by large truncated pyramidal mounds, large ceremonial centers, population increases, and fortified and enclosed villages. From all indications the Mississippian culture in the lower Mississippi Valley was an hybridization of the local indigenous non-Mississippian culture and the Mississippian people and/or ideas (Weinstein and Kelley 1984:42). During this period there was a greater dependence on agriculture centering on maize cultivation. Other cultivated crops included squash and beans. The Mississippian Period reached its height around 1400 A.D.

Mississippian Period pottery is predominately shell tempered with a variety of vessel forms, including zoomorphic figurines. Typical designs include crosses, sun circles, eagle-winged rattlesnakes, feathered serpents, and raptorial birds. Artifacts include ear plugs, gorgets,

earrings, and effigy pipes. In some areas the stylistic designs are similar to those found in the earlier periods except that the designs are now on shell tempered pottery. The Mississippian trade network stretched across the Southeast and Midwest.

Lithic artifacts included:

finely chipped triangular points with or without side or corner notches, drills, chisels, scrapers, axes, knives, ground-stone and polished stone effigy vessels, human effigies, engraved disks, spatulate and monolithic axes, batons, mealing stones, mortars, hoes, celts, and hammerstones [Neuman 1984:276].

Numerous other artifacts were made from bone, shell, and copper.

Two theories have been postulated concerning the emergence and spread of the Mississippian culture. The first contends that the Mississippian culture was spread throughout the southeast from a central core area in the Middle Mississippi Valley (Griffin 1974). In contrast, the second theory states that the culture developed spontaneously with no actual core area (Brown 1976).

Very few Mississippian sites have been found along the coastal area of south Louisiana. The coastal settlement pattern during the Mississippian period indicates the existence of only small seasonally occupied sites along major distributaries. The coastal marsh area may have been used on a seasonal short term basis with more permanent agricultural based villages inland. Mississippian sites have been recorded in Lafourche Parish at the Bowie site, and at Avery Island in Iberia Parish.

Historical Background

Louisiana's state plan (CAP; Smith et al. 1983) identifies many concerns that need to be addressed by the historian/historical archeologist within the boundaries of the state. These include those areas and cultural resources with evidence of Euro-Indian contact; Historic Indian activities; European exploration and colonization; military history; settlement and town development; subsistence and settlement patterns; plantation culture; flatboat, keelboat, and steamboat activities; Civil War battles, including rivercraft; the lumber industry; the oil and gas industry; and tugs, barges, and other river industry. The following historical periods have been used in structuring the historical overview:

Early Exploration (A.D. 1519-1700)
French Period (A.D. 1700-1763)
Spanish Period (A.D. 1763-1800)
Early United States Period (A.D. 1803-1861)
Civil War and Reconstruction (A.D. 1861-1899)
Twentieth Century (A.D. 1900-Present)

Early Exploration (1519-1700). In 1519, Alvarez de Pineda reported that he had come across a great river which he called the "Rio del Espiritu Santo." This river is today known as the Mississippi; Cabeza de

Vaca and the survivors of the Narvaez expedition in 1582 also may have visited the Mississippi (Kniffen 1968:115; Vexler and Swindler 1978:1; Writers' Program 1941:37).

Hernando de Soto is acknowledged as the discoverer of the Mississippi River. The first contact between Europeans and Indians in Louisiana probably occurred when he entered what is now the state of Louisiana. He led an expedition through the area in 1541-1542 but died during the venture. The survivors, led by Luis de Moscoso, eventually found their way down the Mississippi River to the Gulf of Mexico and from there on to Mexico (Carter 1942:13-23; Childs 1982:4-5; Kniffen 1968:115-116; Severin 1968:48, 51-71).

Early in 1682, Rene Robert Cavelier, Sieur de La Salle, started down the Mississippi River from the Illinois country with a large party of men in an effort to explore and develop the Mississippi River valley. In April of that year, he reached the mouth of the river and claimed all the lands within the river basin for France and called it Louisiane for King Louis XIV (Kniffen 1968:116; Severin 1968:146-147). He was the first European to record tribal identities and locations of the Indians in Louisiana.

Within the boundaries of the state six linguistic groups are identified. These groups are Caddoan, Natchezan, Muskogean, Tunican, Chitimachan, and Attapakan. The Caddoan tribes inhabited the northwestern part of Louisiana and included the Kadohadacho, Quachita, Natchitoches, Doustioni, Adaes, and Yatasi. They were primarily agriculturalists, but hunting and trading also were important to their economy. The Natchezan tribes inhabited western Mississippi and the lower reaches of the Red River near Alexandria and Marksville, and the Lake St. Joseph area. They include the Natchez, Tensas, and Avoyel peoples. They were agriculturalists and traders. The Muskogean tribes inhabited southeastern Louisiana and included the Houma, Bayougoula, Acolapissa, Mugulasha, Tangipahoa, Okelousa, Washa, and Chawasha. Agriculture was important to all of these tribes, as were hunting, fishing, and gathering.

The Tunican tribes were agriculturalists in the northeastern part of the state and consisted of the Tunica and Koroa. The Chitimachan tribes lived in the lower Atchafalaya region and include only the Chitimacha. They raised crops and used the resources of the surrounding swamps. The Attakapan lived in southwestern Louisiana and consisted of the Attakapas and Opelousa. They were primarily hunters, fishers, and gatherers.

French Period (1700-1763). In 1698, an expedition left France under the command of Pierre Le Moyne, Sieur d'Iberville, to further explore the lands in Louisiana and establish a colony. The latter objective proved to be impractical. The French reached the mouth of the Mississippi on March 2, 1699, after landing at Mobile Bay by mistake. They moved inland to the present site of New Orleans, from there northward to where Baton Rouge now is, and from there to the mouth of the Red River. Iberville returned to the site of New Orleans where he found two English ships preparing to ascend the river. He dissuaded them from going on by telling them he had a large French garrison upriver, and they turned about, leaving the river and Louisiana to the French (Kniffen 1968:118-120; Carter 1942:27-31).

It was not until 1714 that the French were finally able to establish a permanent settlement in Louisiana called Fort St. Jean Baptiste (Natchitoches). The settlement served to protect French claims in the Red River country and lower Louisiana and to develop trade with the Spaniards in Texas. At Los Adais, 14 miles southwest of Natchitoches, the Spanish established a mission in 1717 and a fort in 1721, which served as the capital of the Spanish province of Texas (Writers' Program 1941:39).

In 1712 the French government consigned trading rights in Louisiana to Sieur Antoine de Crozat, a wealthy French merchant. A charter was granted, the government reorganized, and settlers were imported each year in an effort to establish a profitable trade. Crozat would have succeeded if he could have controlled prices by trading with the Spanish. But the English caused the Spanish to close their ports to French trade. This, and colonial smuggling, served to ruin Crozat's enterprise (Carter 1942:32; Writers' Program 1941:39).

In 1717, Crozat relinquished his concession to the Company of the West, controlled by John Law. Reorganized in 1719 as the Company of the Indies, this enterprise did much toward colonizing Louisiana. Settlers were lured from Europe by glowing accounts of the colony. Although only wilderness awaited these individuals, many remained to work the land and establish themselves as permanent residents.

Spanish Period (1763-1800). At the end of the Seven Years' War (French and Indian War, 1756-1763), France lost Canada to England and was ready to dispose of Louisiana due to its unprofitable nature and its isolation by British and Spanish holdings in the region. Louis XV made a gift of the "Island of New Orleans" and all Louisiana west of the Mississippi to Charles III of Spain. England received the French settlements east of the Mississippi River with the exception of the "Island" and all of Spanish and West Florida (Carter 1942:48-49).

Spain accepted Louisiana, but not without reservations. When Antonio de Ulloa was sent with 90 soldiers to take over the colony in March 1766, the inhabitants promptly revolted. The colony remained virtually independent until August 1769 when Count Alexander O'Reilly arrived with 24 men-of-war and more than 2,000 Spanish soldiers. O'Reilly promptly executed six of the rebel leaders and imposed Spanish law.

Between 1760 and 1790, approximately 4,000 Acadians from Nova Scotia came to Louisiana to settle. They were readily accepted by the Creoles because of their common French descent. Successive groups arrived and settled in southern Louisiana, eventually becoming known as "Cajuns."

At the outbreak of the American Revolution, Spain permitted Spanish officials in Louisiana to aid the colonists against the British by supplying munitions and supplies. Bernardo de Galvez, acting governor at the time, permitted James Willing to use New Orleans as a base to attack loyalists in West Florida. With the declaration of war between Spain and England in 1779, Galvez and his own troops captured Manchac, Baton Rouge, and Natchez. By May 10, 1781, Mobile and Pensacola had been taken and both Floridas were added to Spanish Louisiana. The northern boundary of

West Florida ultimately became the state line of Louisiana east of the Mississippi (Writers' Program 1941:41).

Early United States Period (1803-1861). On November 30, 1803, Louisiana was officially transferred to the French Government, under Napoleon. Twenty days later it was transferred to the United States, and on April 30, 1812, Louisiana was granted statehood. Soon thereafter (January 8, 1814), Louisianians under the command of General Andrew Jackson, with volunteers from Kentucky, Tennessee, and Mississippi, Choctaw Indians, Baratarians, and free Negroes, defended New Orleans against a British force of Wellington's veterans under the command of General Sir Edward Pakenham in the Battle of New Orleans.

After the War of 1812, economic development increased dramatically. Steamboat arrivals at the city increased in number from 21 in 1814, to 1,573 in 1840. Towns began to spring up in the outlying parishes, and planters from neighboring states migrated to Louisiana to take advantage of the fertile land. Captain Henry Shreve succeeded in clearing the Red River of the driftwood that had obstructed it for centuries and opened that river to navigation and settlement.

Louisiana was a gateway to the Southwest by way of the San Antonio Trace. To protect the frontier, Cantonment Jesup was established west of Natchitoches in 1822 and Cantonment Atkinson at Lake Charles in 1830. The state was also the jumping off point for U.S. troops headed for Mexico during the Mexican War (Writers' Program 1941:47).

Civil War and Reconstruction (1861-1899). Following the lead of South Carolina and other southern states, Louisiana seceded from the Union on January 26, 1861. For the six weeks before it joined the Confederacy, the State existed as an independent republic under its own flag. For a year after the outbreak of the war, Louisiana remained undisturbed by warfare within its borders. In April 1862, however, New Orleans was taken by invading Union forces under David G. Farragut. On May 1, 1862, General Benjamin F. Butler brought 15,000 troops into New Orleans and began a dictatorial and highly unpopular military rule of the city. Meanwhile, Farragut continued up the Mississippi, taking Baton Rouge and Bayou Sara.

Until the early part of 1863 practically all of Louisiana west of the Mississippi was still held by forces of the Confederate States of America. Opelousas was then the capital of Confederate Louisiana. Under General Dick Taylor, the Confederates had kept Butler in New Orleans and the surrounding parishes east of the river. But they were unable to prevent Butler's successor, General Nathaniel P. Banks, from taking possession of southern Louisiana as far west as Berwick Bay.

Many of the activities during the war in Louisiana were centered along the Mississippi and its tributaries. Battles involving Union and Confederate gunboats took place on the Mississippi, Red, and Sabine rivers. In 1864 Taylor and his small army successfully frustrated a Federal attempt to take Shreveport and conquer the Red River territory. Later, Banks led two Union forces, one sent up Red River and another up Bayou Teche, that penetrated as far as Mansfield. There they were

defeated in a bloody engagement and driven back to Alexandria in disorderly retreat. After that there was little fighting in Louisiana (Winters 1963:356-379; Writers' Program 1941:47-48).

After the war, the State was once more united under one government administered by a succession of military governors. Conforming to the Reconstruction Acts of March 21 and 23, 1867, a constitution in keeping with the Thirteenth, Fourteenth, and Fifteenth Amendments was drawn up for the State. From 1868 to 1877 Louisiana suffered from racial strife, plundering by Federal officials, crushing taxation, bribery, and official disregard for civil rights under a series of carpetbagger governments. In 1877, after the inauguration of President Hayes, carpetbag rule was lifted. Federal troops were withdrawn and home rule was restored.

An important factor in the economic recovery of Louisiana was the work done by Captain James B. Eads in deepening the channel at the mouth of the Mississippi. Railroad expansion soon followed the increased facilities of the port, and by 1899, New Orleans had recovered its former commercial importance.

Twentieth Century (A.D. 1900-Present). After 1900 Louisiana entered upon an era of commercial and industrial expansion. Abundant natural resources, including oil, sulphur, salt, and natural gas were discovered throughout the state. Transportation facilities kept pace with industrial development; railroad trunk lines were constructed to every section of the state, roads were improved, and canals were dug to form a network of waterways.

From 1928 to 1935 Louisiana's history was influenced largely by Huey P. Long ("the Kingfish"), the State's most colorful political figure. Soon after his inauguration as governor in 1928, he built a powerful political machine and firmly entrenched himself as the virtual dictator of the state, the popular idol of his followers, and the bitter enemy of his political opponents. In the United States Senate (1930-1935) he attained nationwide fame. As the champion of the "Share the Wealth" program, through which he proposed to redistribute the nation's wealth, Long succeeded in amassing a large national following. By the time his career was cut short by assassination in Baton Rouge in 1935, he had taken a conspicuous place in national affairs and seemed ready to embark upon more ambitious political adventures. Although Long ruled Louisiana with an absolutism rarely seen in American politics, Louisiana is indebted to his regime for many public improvements. The highway system was modernized, the State University and hospitals greatly enlarged, a sea wall, airport, bridge, and spillway built at New Orleans, free textbooks were distributed to school children, and a new capitol was constructed at Baton Rouge (Writers' Program 1941:49-52).

CULTURE HISTORY OF THE NOV AREA

Prehistoric Background

Very little is known about the prehistoric aboriginal period in Plaquemines Parish. Environmental conditions have not always allowed for easy identification of prehistoric sites. There are and were probably many more sites than those presently recorded in the parish but

destruction by man, subsidence, and the inaccessibility of the areas has obscured these data. Of the 35 prehistoric sites located in Plaquemines Parish only 4 are located within the project vicinity (16PL12, Pointe a la Hache site; 16PL34, Grand Bayou; 16PL36, The Hills; and 16PL81, Live Oak Bayou). Several studies have mentioned prehistoric sites in the area, including Kniffen's (1936), McIntire's (1958), and Neuman's (1977) surveys of the Louisiana coastal area and extensive work conducted in Plaquemines Parish by Coastal Environments, Inc., (e.g., Gagliano, Weinstein, and Burden 1978; Wiseman et al. 1979).

In the late 1800s and early 1900s several reports mentioned prehistoric remains in Plaquemines Parish. In 1873, John W. Foster wrote a book entitled *Prehistoric Races of the United States of America* which mentioned mounds, shell middens, and artifacts found in the coastal wetland from Pointe a la Hache on the east bank of the Mississippi river westward to Bayou Teche (Neuman 1977:7). Prehistoric sites were also mentioned in reports conducted by geologists, engineers, and others working in the coastal area.

One of the earliest professional archeologists to record sites in Plaquemines Parish was Henry B. Collins, Jr. In 1926, Collins (who worked with the Smithsonian Institution) spent two months surveying coastal sites around Pointe a la Hache and Bayou Grande Cheniere in Plaquemines Parish. Collins began his investigation at a group of nine mounds located on a natural levee along Bayou Grande Cheniere southwest of Pointe a la Hache (Collins 1927:201). In 1952, Fred Kniffen reported the location of a mound along the banks of Bayou Grande Cheniere where Bayou Hermitage (a possible man-made canal) cuts across the bayou near a settlement known as Hermitage. This single mound site, 16PL18, may be the remains of Collins' mound complex.

Kniffen, a cultural geographer, was interested in identifying prehistoric sites in the coastal area. He wanted to determine the degree of their subsidence and their cultural affiliation in order to identify and possibly date submerged levee and beach ridges, and rates of land subsidence in the coastal area (Neuman 1977:10). In 1936, Kniffen and Richard J. Russell, a physical geographer, and Henry V. Howe, a geologist, conducted a survey they hoped would provide information on the interrelationship between cultures and their environment as well as provide information on deltaic geomorphology.

Kniffen's survey identified 44 mound and midden sites in St. Bernard and Plaquemines Parishes. At each site, mounds were measured and sketched, borings taken, and surface collections made. Kniffen divided the sites into four types based on composition and structure: earth mounds; shell mounds; shell middens; and beach deposits. Kniffen collected artifacts from the surface of these sites but not from their excavations. Based on characteristics of ceramic temper and decoration, Kniffen divided the sherds found at these sites into two complexes termed the Bayou Cutler and Bayou Petrie.

Kniffen linked the chronology he developed from these sites into a cultural chronology then being developed by James A. Ford for the lower Mississippi Valley. The Bayou Cutler complex was correlated with Ford's Coles Creek Period and the Bayou Petrie complex with the Plaquemine Period. Kniffen also noted that there were differences in the material culture between the coastal and inland adaptations. Most of the sites were not along the banks of the Mississippi River but along older distributary channels back from the present course of the Mississippi River (Kniffen 1936:413-414).

During the 1930s the Works Progress Administration (WPA) sponsored several large-scale surveys and excavations but none of these projects were conducted in the NOV Area or vicinity. Archeologists such as James Ford, James Griffin, George Quimby, and Philip Phillips conducted numerous surveys and excavations throughout the 1930s and early 1940s. These archeologists were mainly concerned with developing a cultural chronology for the lower Mississippi Valley. The results of these projects was the development of the Lower Mississippi Valley chronology, a sequence of ceramic assemblages keyed to temporal periods. Together with other related material remains, the assemblages characterized discrete cultures, each existing for a given period of time until replaced by the next. The chronology gradually became accepted as the norm by archeologists in Louisiana.

Following Kniffen's work, very little archeological work was conducted in the NOV Area work until the late 1950s. In 1958, William McIntire published *Prehistoric Indian Settlements of the Changing Mississippi River Delta*, in which he examined the various deltaic lobes of the Mississippi River and attempted to date them by their associated archeological remains. By establishing the periods of initial human occupation, he sought to assign a minimum age to the land formed during major geomorphic episodes of delta formation. McIntire examined over 500 sites in the Louisiana coastal area, obtaining cores and identifying the archeological remains and their placement within the Lower Mississippi Valley chronology. McIntire then used these data to arrange the land forms in relative chronological order. McIntire's analysis of the archeological remains led him to infer, among other things, that southern Plaquemines Parish was not occupied until the late Coles Creek period (circa A.D. 900).

Another archeological hiatus followed McIntire's Louisiana coastal survey. Not until the 1970s were several archeological surveys conducted in the NOV Area and vicinity. Many of these surveys were supported by the U.S. Government in preparation for construction work (e.g., revetment and levee work) by the NOD-COE. J. Richard Shenkel conducted several surveys along the Mississippi River and found no in-situ prehistoric remains (Shenkel 1976a, 1976b, 1976c, 1976d, 1977a, 1977b). Since Shenkel's work, many surveys have been conducted in Plaquemines Parish but most of these have been along the Mississippi River. Unfortunately, very few surveys have been conducted in the marsh areas and distributaries away from the river. One exception was the 1978 survey conducted for the NOV by Dave Davis of Tulane University on the west bank of the Mississippi River in southern Plaquemines Parish. Davis refers to three prehistoric sites in his report, 16PL8, 16PL13, and 16PL34 (Davis et al. 1978). The Adams Bay

site (16PL8) located on the bay of the same name was originally reported by Kniffen in 1936 as consisting of three earth mounds and five small shell heaps. The surface artifacts found at the site were assigned to the Plaquemine Period. The Buras Mounds site (16PL13) located near the settlement of Buras consisted of one large earth and shell mound, two smaller earth and shell mounds and possibly a even smaller mound. Kniffen originally recorded the Buras Mounds site in 1936 and McIntire later assigned it to the Plaquemine Period. The Grand Bayou site (16PL34), located on the west bank of the Mississippi River along Grand Bayou, was recorded by McIntire in 1958. This site was a large shell deposit along the bayou; no cultural affiliation was inferred for this site.

Prehistoric Cultural Sequence

As stated in the regional overview, prehistoric cultures in the Southeastern United States have been divided by archeologists into four major developmental stages. From the oldest to the most recent, these are the Paleoindian, the Archaic, the Woodland and the Mississippian Periods. In Louisiana, the Woodland and Mississippian Periods are further divided into five or six periods.

In the NOV Area itself no Paleoindian, Archaic, Poverty Point, Marksville, Baytown, Troyville, or Coles Creek period archeological sites have been recorded. In fact, only seven prehistoric sites that can be assigned to a specific cultural affiliation have been recorded in Plaquemines Parish. The regional background summarized the characteristics of these cultural periods. These characteristics do not appear to be markedly different for the NOV Area. Therefore, they are not repeated here.

Tchefuncte Period (500 B.C.-A.D. 100). Only one Tchefuncte period site has been recorded in Plaquemines Parish. The site, Caenarvon 1 (16PL148), was recently recorded by R. Christopher Goodwin and Associates, north of the NOV Area, on the Big Mar in Plaquemines Parish (Poplin et al. 1987). The site consists of the remains of a shell midden.

Coles Creek Period (A.D. 700-1100). Two Coles Creek period shell midden sites have been found in Plaquemines Parish. These are the Wiltz Ridge site (16PL1) and the Mouth of Bayou Robinson site (16PL30). The latter site also has a Plaquemine period component. Many other Coles Creek period sites have been recorded in the surrounding parishes.

Plaquemine Period (A.D. 1100-1500). Numerous Plaquemine sites have been found along the coastal area of Louisiana. One of the better known Plaquemine sites in the project vicinity is the Fleming site in Jefferson Parish. Within Plaquemines Parish, only four Plaquemine period sites have been recorded. These are the Adams Bay site (16PL8), the Pointe a la Hache site (16PL12), the Buras Mounds (16PL13), and the Mouth of Bayou Robinson site (16PL30). The Buras Mounds (16PL13) also has a Mississippian period component.

Mississippian Period (A.D. 1200-1700). Very few Mississippian sites have been found in the coastal area of south Louisiana. One Mississippian site, the Buras Mounds (16PL13), has been found in Plaquemines Parish. The Buras Mounds site consists of one large earth and shell mound and two

smaller mounds. The site may have contained at least three to four mounds around a central plaza (Gagliano et al. n.d.:A.4, A.30). Also found in Plaquemines Parish was a typical Mississippian clay and grit tempered rim sherds from a bowl. This was found along Grand Bayou. The sherds had the classic eye and hand motif common to the Mississippian culture. Unfortunately the sherds were an isolated find with no context.

Historical Background

Early Exploration (1519-1700). European exploration into southeast Louisiana began with the Hernando DeSoto expedition in 1544. Louis de Moscoso, the commander of the DeSoto expedition after the death of DeSoto, found the mouth of the Mississippi River while trying to make his way to the Spanish colony in Mexico. Following this expedition, southeast Louisiana was not explored again until 1682 when Rene Robert Cavalier, Sieur de La Salle descended the Mississippi River from Canada to explore the mouth of the Mississippi River. On April 6, 1682, La Salle reached the Head of Passes and planted a large wooden cross claiming all the lands drained by the Mississippi River for France. La Salle named this new land Louisiana in honor of the King and Queen of France.

The Chitimacha were another tribe living in southeast Louisiana at initial contact. In 1699, Iberville made an alliance with one group of Chitimacha who were living around the present town of Donaldsonville at the confluence of the Mississippi River and Bayou Lafourche. Several other Chitimachan villages were located around Grand Lake and between Bayou Lafourche and Bayou La Teche and along the Gulf of Mexico (Swanton 1946). According to Swanton (1946:184), the tribe had about 3000 members in 1700. In 1702, however, St. Denis (a French explorer) attacked the Chitimacha in order to obtain slaves. The governor of the colony at the time, Sieur Bienville, ordered St. Denis to release the Indian slaves.

The Chitimacha attacked and killed a French missionary St. Cosme and three of his companions in 1706 (Swanton 1946). The French and their Indian allies attacked the Chitimacha in retaliation. In 1707 the French destroyed one of the main Chitimachan villages and took Indian prisoners to be used as slaves (Swanton 1911:337-338). Those Chitimachan Indians that managed to escape moved further west. The Chitimachan War, as it was known, did not end until 1718 when Bienville made peace. Following the Chitimachan War, most of these Indians moved into Lafourche, Terrebonne, and St. Mary Parishes. Today the Chitimacha tribe lives on a 283 acre Indian reservation in St. Mary Parish near the town of Charenton (GSRI 1973:10).

While there were no known Chitimachan villages in Plaquemines Parish, some were known to travel into the area, possibly for hunting and fishing expeditions. Iberville reportedly had Chitimachan guides when he was exploring the Mississippi river in 1699.

Only two groups of Indians were living in Plaquemines Parish during the early exploration period. These were the Chawasha and the Washa. The Chawasha were a small tribe that was allied to the larger Chitimachan tribe (Swanton 1946:108). The Washa and Chawasha were linguistically related to the Chitimacha (Swanton 1911). In 1699 the Chawasha and the Washa were living along Bayou Lafourche. Between 200 and 300 Washa and

Chawasha Indians lived along Bayou Lafourche at the time of European contact (McIntire et al. 1981:55). Iberville first mentioned the Washa in 1699 when he and several companions descended Bayou Lafourche and encountered a village near present day Labadieville. The Indians were so unfriendly that the French were forced to leave (La Harpe 1971:23). According to Du Pratz, the Chawasha and Washa attempted to attack an English vessel that was moored at English Turn. This was the same vessel that Bienville later turned back at the famous "English Turn" incident.

Around 1713 the British-allied Natchez, Chickasaw, and Yazoo tribes attacked the French-allied Chawasha to obtain slaves for the British (Swanton 1946). Bienville later moved the Chawasha downriver from the settlement of New Orleans, 25 leagues (97.5 to 185 km) from the mouth of the Mississippi River (Swanton 1946:109). Sometime before 1722 the Chawasha moved from around English Turn further downriver. According to a French priest, Father Charlevoix, the Chawasha moved their village and even the bones of their dead to a new village site (Charlevoix 1977:172). In ca. 1729 the Chawasha were attacked by black slaves on orders from the French Governor Perrier. The French colonial government feared an Indian uprising following the Natchez attack on French settlers at Fort Rosalie. The few Chawasha that survived the French attack moved west and were assimilated into neighboring groups such as the Acolopissa, Chitimacha, and Houma. No further mention is made in the historical record after 1802 of the Washa or the Chawasha (Davis et al. 1981:72).

French Period (1700-1763). After the failure of the La Salle expedition, it was not until 1699 that France finally sent another expedition to Louisiana to establish a colony in the area. Pierre le Moyne, Sieur d'Iberville and his brother Jean Baptiste le Moyne, Sieur de Bienville established a French colony, Fort Maurepas, near present day Biloxi. Iberville and Bienville explored the surrounding area along the Gulf of Mexico and rediscovered the mouth of the Mississippi River. Following this Iberville returned to Fort Maurepas while Bienville continued exploring the area. On descending the river, Bienville encountered an English ship at a bend in the river that was waiting for favorable winds to continue its journey upriver. The English ship's captain had been sent with colonists to establish a settlement on the lower Mississippi River. Fearing the English would settle in the area before the French, Bienville told the English that there was already a French settlement upriver, as well as a French fleet. The English Captain turned his ship around and sailed downriver. Since this time the bend in the river was called *Detour des Anglais* (English Turn). Bienville's successful bluff insured the lower Mississippi River would remain French territory for years to come.

The fear of English encroachment prompted Iberville, in 1700, to build a fort on the east bank of the Mississippi River approximately 54 miles from its mouth, in present day Plaquemines Parish near the town of Phoenix. This fort was called Fort du Mississippi, although in later years it was also called Fort de la Boulaye (16PL27) after a settler in the area. The site for the fort was selected by Iberville after he was assured by an Indian guide that the area did not flood. Fort du Mississippi consisted of a square wooden blockhouse and magazine surrounded by a ditch and one or more cannons. There may have been a

house for the officer in charge and five or six cabins for the the men stationed at the fort. Father de Ru, a French priest, established a cemetery near the blockhouse. He also experimented with planting oranges, sugar cane, and a few other crops near the fort but these were later destroyed by floods and bad weather (Giraud 1974:39-40). Historical records indicate that the fort was officially occupied until 1707 and completely abandoned in 1715.

It was not until 1718 that Bienville founded the city of Nouvelle Orleans (New Orleans) on the east bank of the Mississippi River. As the population of the city grew some of the settlers established farms upriver and downriver from the city. These early farms were generally located near abandoned Indian villages, where fields had already been cleared (Davis et al. 1981:71). The King of France and the Company of the Indies granted large tracts of land to settlers in hopes of establishing a thriving colony. A census conducted in 1721 of New Orleans and the surrounding area, indicates that there were several large concessions below New Orleans and around English Turn, Fort du Mississippi, and the Balise (Maduell 1972:22). A concession is a tract of land granted to an individual or group with the understanding that the owner would clear the land, build a house within a year and a day, and cultivate the land. Land grants were usually eight arpents (approximately 1500 feet) wide along the river and 40 arpents deep (approximately 1 1/2 miles). In the French system of land tenure, land was measured off along the high ground of natural levees paralleling rivers and bayous and extending back to the marshlands (Kniffen 1968:122).

The early planters built houses that were constructed in the "brique entre poteaux" (brick between posts) or by bousillage (clay and sticks between posts). Siding was placed over the outside of the structures. These early structures were square in plan and had gabled or hip roofs and front porches (Kniffen 1968:132).

With more and more ships entering the mouth of the Mississippi River the French decided to build another fort, this time at the mouth of the Mississippi River. This new fort was called the Balise. The Balise was to act as a lighthouse and customhouse for ships at the mouth of the river and a fort to prevent any hostile ships from sailing up the river. This fort was built at the mouth of Southeast Pass on a little island that was known as "Isle of Toulouse" (Lincoln 1984:2). The fort consisted of a battery, warehouse, powder magazine, chapel, two barracks for the soldiers, and quarters for the chaplain, commanding officer, river pilots, sailors, warehousemen, and slaves.

The early farmers in Plaquemines Parish began to experiment with crops to see what could be grown successfully in this area. In the early years of the colony agriculture was oriented solely towards subsistence. When the French government realized that Louisiana did not have gold or silver, the government encouraged the cultivation of tobacco and indigo for revenue. Early colonial crops included subsistence crops, such as corn and rice, and cash crops, such as tobacco and indigo. In Plaquemines Parish, most of the farmers grew rice and corn and/or indigo (Maduell 1972).

Rice cultivation was attempted shortly after 1721 when it was brought to Louisiana from the Carolinas. It was not until Senegali slaves were brought to the colony that the planters acquired the knowledge and skill to cultivate rice successfully (Davis 1961). Rice cultivation was well suited to the lowlands of Plaquemines Parish and highly successful. Most of the early rice was cultivated in small plots but fields were expanded as the technology improved. By 1726 the rice yield was so favorable that some of the surplus was exported to France (Louisiana County Agents n.d.:62; Knipmeyer 1956:22).

Corn was also grown in Plaquemines Parish, but it was considered a subsistence crop to be used as feed for animals and food for poor people and slaves. By 1710 corn was cultivated in all of the settlements and its production constantly rose as the years passed (Davis 1961:72). "Of the 756 total arpents river frontage granted in Plaquemines Parish before 1763, 504 arpents were cultivated in corn or rice" (Goodwin et al. 1986:694).

Indigo was also considered an important cash crop. Wild indigo grew in Louisiana but it was of poor quality. A domesticated variety of indigo brought from the West Indies to Louisiana proved to be very successful. Large numbers of slaves were needed to cultivate, harvest, and process indigo and very few planters owned large numbers of slaves in the early 1700s. To increase production, more slaves were brought to the colony. In 1754, 82,000 pounds of dye were produced by 47 plantations in Louisiana (Hansen 1971:61). Historical documents indicate that indigo was being cultivated in Plaquemines Parish near English Turn in the 1750s (Pargellis 1969:48-50).

Several different types of fruit were grown in colonial Louisiana. As noted earlier, orange trees were first planted by Father De Ru at Fort du Mississippi in Plaquemines Parish as early as 1712 (McEachern 1947:29). Later oranges were planted by families in flower gardens around their houses (Schoenberger and Petrovich 1983:355). By the 1800s there were small orchards of oranges at Pointe a la Hache and in the surrounding area (Schoenberger and Petrovich 1983:355). The oranges provided fresh fruit, and if the crop was abundant, the surplus could be sold in New Orleans.

Sheep and cattle husbandry was also important to the subsistence of colonial Louisiana. Although cattle was brought to the colony in 1714, it took many years for the colony to produce enough meat to supply the local demand (Louisiana County Agents n.d.:2). At one point, the French government prohibited the killing of livestock so the herd population could increase (Davis 1963:75). By the 1750s, the colony was able to produce a fair percentage of its meat demand. The census tables for 1721, 1726, and 1731 indicate that colonial planters in south Louisiana herded both cattle and sheep (Maduell 1972). Census data for 1763 indicates that there were 296 sheep and 1013 head of cattle in the area now known as Plaquemines Parish (Robichaux 1973).

It was not until the 1740s that sugar cane cultivation was again attempted by Jesuit priests on their plantation in New Orleans (Wilson 1980:51). Unfortunately the priests did not have an efficient process with which to granulate the sugar and they could produce only a coarse

grain sugar and molasses. Sugar cultivation and production did not become economically viable until 1794 when Etienne de Bore successfully developed a process that could granulate sugar efficiently and in larger quantities (Le Gardeur 1980).

More and more land was put into sugar cane cultivation in the late 1700s and early 1800s because of a failure of the indigo crop from bad weather and a caterpillar infestation. The combination of De Bore's granulation process, an immigration of the sugar cultivators from Santo Domingo, and the failure of the indigo crop led to the rise of sugar cane as the primary cash crop in South Louisiana.

The early farmers and colonists who lived along the Mississippi River and on the bayous in South Louisiana had to contend with the problem of flooding in the area. Almost annually the Mississippi River would flood, inundating houses and destroying fields. Shortly after the founding of New Orleans, Governor Perrier ordered all colonists living along the river to build a levee along their frontage to prevent flooding. By the 1740s, a continuous levee had been constructed from New Orleans to English Turn (Pargellis 1969).

Transportation was also a problem during the early colonial years. A road was built on top of the river levee above and below New Orleans. By the end of the French Period, a coach road had been constructed along the river 18 miles below New Orleans (Surrey 1916:92). For improvement of water transportation, Governor Perrier ordered that each landowner along the Mississippi river place a oak or cypress post at the water's edge so vessels could lay anchor when necessary.

The fortification of the Mississippi River remained a priority throughout the French colonial period. In 1746, Governor Pierre de Rigaud de Vaudreuil, fearing an English attack on New Orleans, ordered that two forts be built at the bend of English Turn. English Turn is a bend in the river which curves so sharply that a ship with favorable wind to sail upriver to this point often had to wait for winds from another direction to continue sailing upriver. The forts at English Turn were to be located across from each other, one on the east bank and one on the west bank, to allow for maximum fire power on a stalled or slowed enemy vessel. The fort on the west bank later became known as Fort St Leon and the fort on the east bank became known as Fort St. Mary. The settlement that developed around these forts became known as the Detour d'Anglais settlement.

Two additional French military outposts, a fort and a battery, were constructed in 1749 at Plaquemines Bend approximately 22 miles above the Head of Passes. Governor Vaudreuil had ordered that a fort be constructed on the east bank of the Mississippi River and a battery be located and constructed opposite the fort on the west bank of the river. The battery on the west bank was known as Fort Bourbon and the fort on the east bank became known as Fort St. Philip (16PL39). The battery (Fort Bourbon) could focus cannon fire on invading ships at the bend that tried to evade the fire from Fort St. Philip by remaining close to the west bank. A settlement also grew up around Fort St. Philip which was then called the "Post of the Plaquemines" (Maduell 1972).

Another settlement which developed during the French period was Pointe-a-la-Hache. This settlement was indicated on the 1732 D'Anville map. The Balise (Balize) also had a small settlement consisting predominantly of ship pilots, soldiers, trappers, and fishermen.

Spanish Period (1763-1800). In 1763, the Isle of Orleans and Louisiana west of the Mississippi River became a Spanish colony while the Florida parishes were ceded to England. The Spanish King did not send a governor to the Louisiana colony until 1766, when the new governor Antoine de Ulloa arrived at Balize. Ulloa and his wife lived at Balize and did very little to win the friendship of the local inhabitants. The new governor and his wife were so disliked by the French inhabitants of Louisiana that in 1769 they were forcibly expelled from the territory.

On August 17, 1769, a new governor was sent to Louisiana by the Spanish King. This new governor, Don Alejandro O'Reilly arrived with a fleet of 24 ships carrying cavalymen, artillery and infantrymen totaling just over two thousand men (Davis 1961:102). O'Reilly began his governorship of Louisiana by punishing the leaders of the French uprising. After taking control, O'Reilly began to reorganize the colony. The colony was still feeling the effects of the French and Indian War on their economy (Davis 1961:133). O'Reilly stated that the colony needed "flour, wine, oil, tools, arms, munitions, and all kinds of cloth to make clothing, and can obtain them only by exporting its product" (Davis 1961:104). O'Reilly recommended that the Louisiana colony be allowed free trade with Spain and the other Spanish colonies. O'Reilly and the subsequent Spanish governors encouraged the production of corn, wheat, meat, and other subsistence goods. Once the colony produced enough food to become self-sufficient the Spanish government encouraged the production of indigo, tobacco, flax, hemp, and cotton (Davis 1961:62). Slowly the colony began to recover and prosper as a result of this new policy. The Spanish government also encouraged immigration to the colony in hopes that the economy would improve, and that settlement in the area would provide a buffer zone between English settlements to the east and Spanish settlements to the west. As a result of this policy, many immigrants including Filipinos, Acadians, and Islenos began to move into the area. The Islenos moved westward to an area around Bayou Des Familles in Jefferson Parish and later moved into St. Bernard Parish after a hurricane destroyed their settlement. The Acadians moved north of New Orleans into St. James and Ascension Parishes and later westward into Lafourche, Terrebonne, St. Mary, and St. Martin parishes and further west. Land and supplies were given to these immigrants as long as they swore allegiance to the King of Spain and would agree to raise their children in the Roman Catholic faith.

The 1770 Census Roll indicates that 334 whites and 1,647 slaves were living below New Orleans (Voorhies 1973). The majority of people living in Plaquemines Parish at this time were of French or French Canadian descent and they made their living by farming rice, corn, and some sugar cane.

During the Spanish Period the various governors toured the military posts and the government buildings to see what repairs needed to be made. Ulloa visited the forts in Plaquemines Parish including the two forts at

English Turn, the two forts at Plaquemines Bend, and the Balize (Spanish spelling) and found that all were in need of repair. The Spanish built a new fort, which they named Fort Real Catolica, near the old French Balize. Fort Real Catolica was soon destroyed by severe flooding. The French Balize was so dilapidated that a new Spanish Balize was built at Southeast Pass near the mouth of the Mississippi River. The Spanish Balize included an earthen battery of three or four cannon manned by approximately 20 soldiers (Lincoln 1984:40). Spanish Balize was destroyed by a hurricane in 1778 (Wilken 1939:13). Despite the destruction of Spanish Balize, the surrounding area remained occupied by trappers, river pilots, and fishermen throughout the Spanish period.

In June 1779, Spain declared war on Great Britain. The forts along the Mississippi River were repaired and armed. The Spanish governor at this time, Bernardo de Galvez, and his troops fought the English at Baton Rouge and in the Florida Parishes. Plaquemines Parish did not see any military action during this war.

By the end of the Spanish colonial period several major changes had occurred in the economy and in the population of Louisiana. The economy had become increasingly dependent upon sugar and rice cultivation in southern Louisiana and on cotton in the central and northern section of what is now the state of Louisiana. Sugar and rice production were now the most important cash crops in Plaquemines Parish.

The ethnic character of southern Louisiana had changed from a predominately French population to one containing elements of French, Spanish, Acadian, Islenos, Fillipino, and African population groups. The slave population increased because more labor was needed for indigo cultivation and later for sugar, and cotton production. By the end of the Spanish Period there were 28,000 slaves in the colony (Fiehrer 1979:11).

More and more Americans began to move into southern Louisiana towards the end of the Spanish period. Tensions between Spain and the United States increased towards the end of the eighteenth century. With the signing of the Treaty of Madrid, the United States was allowed free navigation of the Mississippi River and the right of deposit at the city of New Orleans. As a result of this treaty more Americans began to travel up and down the river to trade with Spanish settlements. In October 1800, the Spanish government transferred the Louisiana Territory back to France in the Treaty of San Ildefonso. France, in turn, sold the Louisiana territory to the United States in 1803.

Early United States (1803-1861). The Territorial government of Louisiana was established in 1804. In 1805, the Territory of Orleans was created. It consisted of 12 counties, including present day Plaquemines Parish. The American territorial government found that the county system did not work as well as the old colonial system of ecclesiastical parishes, so in 1807 the parish system was reinstated (Brasseaux 1985). The parish of Plaquemines was established at this time. In 1812, Louisiana was admitted into the United States of America as the eighteenth state.

The first American governor of Louisiana was William C.C. Claiborne. The relationship between the United States and Great Britain became

increasingly strained, resulting in war between the two countries in 1812. Before and during the early years of the war, Claiborne reinforced the lower river defenses. In 1807 he ordered that a new fort be constructed on the west bank of the river at English Turn. By the end of the nineteenth century very little remained of the French/Spanish forts of Fort St. Leon and Fort St. Mary.

In 1814, General Andrew Jackson, Commander of the Seventh Military District, ordered the construction of a battery on the west bank of the river near the remains of the old Fort Bourbon at Plaquemines Turn. Fort Bourbon had been damaged by two hurricanes in 1795 and was not considered worth repairing (Lincoln 1986). Repair work was ordered for the east bank fort at Plaquemines Turn, Fort St. Philip. Jackson also ordered that redoubts and batteries be constructed on the east bank at English Turn. A detachment of 355 state drafted militia, under General Morgan, was stationed on both sides of the river at English Turn (Martin 1975:184).

The United States government realized the importance of the Mississippi River from both a military and economic viewpoint. Spanish Balize was in such disrepair the new American government ordered the construction of a new lighthouse, workmen shops, barracks, and four pilot houses just to the east of the old blockhouse at Balize (Lincoln 1984:124-126). A fort or redoubt was also constructed at the mouth of Bayou Balize and the river channel. This fort, known as Fort Wilkinson, was a diamond-shaped fort with a battery of five cannon (Lincoln 1984:24). The battery was finished in April 1813, but the fort's supporting structures and interior were never completed. The fort was abandoned by the United States soldiers and construction workers in July 1813. Shortly after Fort Wilkinson was abandoned, the British took control of the structure and used it as a base of operations until after the Battle at Chalmette.

In December 1814, the British land forces made their way to St. Bernard Parish and advanced slowly towards New Orleans. The British sea forces entered the mouth of the Mississippi River and advanced upriver until they encountered the American forces at Fort St. Philip and the battery on the west bank. On January 9, 1815, the British warships opened fire on Fort St. Philip. The American forces managed to keep the British at bay until they finally gave up and withdrew downriver. The American success at Fort St. Philip ended British attempts to capture New Orleans.

Plaquemines Parish prospered under the American government in the early 1800s. The parish was predominately an agricultural area made up of large plantations and small farms. On the west bank of the Mississippi River, these plantations extended to below Buras, and on the east bank to Bohemia.

The parish economy was primarily based on the production and sale of sugar and rice. By the turn of the nineteenth century, there were at least 75 plantations growing sugar in Louisiana, many of which were located in Plaquemines Parish. The number of sugar plantations in the state increased each year. By 1827 there were 300 sugar plantations and by 1849, there were 1,500 (Louisiana Legislative Council 1964:47).

Sugar was an important cash crop in southern Louisiana in the 1800s. One historian notes: "As early as 1828, in the river parishes of St. Bernard, Plaquemines, Jefferson, St. Charles, St. John the Baptist, St. James, and Ascension, there were only 23 sugar plantations producing less than 50 hogshead while there were 194 that produced 100 or more" (Sitterson 1953:47).

Sugar cane was an easy crop to grow or process. Several factors were necessary to insure a good crop, including a sufficient labor force, good soil fertility, good soil drainage, correct planting procedures, and the saving of the best sugar cane cuttings for the next planting season (Le Gardeur 1980:36). Major technological advances appeared in sugar production between 1830 and 1860. The vacuum pan, a new sugar making process, was invented in 1830 and was a major improvement over the old open kettle system (Le Gardeur 1980:36).

In the early nineteenth century, rice was still being cultivated in Plaquemines Parish (Ginn 1940). The 1850 census indicates that sugar cane was grown predominantly in the northern section of the parish while rice was the dominant crop grown in the low-lying, easily flooded areas of southern Plaquemines Parish. *DeBow's Review* of 1847 states that there were 200 or more rice plantations in Plaquemines Parish. In 1866, Louisiana produced 50,000 barrels of rice a year of which the majority came from Plaquemines Parish (Louisiana County Agents n.d.:61).

Plaquemines Parish began to produce oranges in marketable quantities by 1838 (Armstrong 1984:356). In 1847, *DeBow's Review* referred to Plaquemines Parish as producing large quantities of lemons and oranges. Oranges from Plaquemines Parish were shipped upriver in sailing vessels initially and later by steamboat.

Goods and produce were shipped by boat to New Orleans in the early nineteenth century. The first steamboat to come down the Mississippi River was the *New Orleans*. Several boats ferried goods from New Orleans to the plantation landings downriver, bringing luxuries and supplies from the city and carrying back sugar, oranges, orange blossoms, rice, and other vegetables. The boats also served as one of the major means of transportation for the people of Plaquemines Parish.

In the late 1820s, a severe flood devastated many plantations along the river. The state legislature was forced to take action and between 1845 and 1858, existing levees were repaired and new ones constructed on the east bank to Pointe-a-la-Hache. By 1874, the east bank levee had been extended to Fort St. Philip (Gremillion n.d.:7).

Settlements in Plaquemines Parish increased in size as one approached New Orleans. The area below Plaquemines Bend to Balize remained sparsely inhabited because of its low and marshy terrain. However, the land above Plaquemines Bend to English Turn had plantations, saw mills, sugar and rice mills, and small cultivated acres of vegetables that were so close together that it gave the impression of one continuous settlement. Settlements usually developed around the plantation store and boat landings. In the period before the Civil War, the parish seat was located on a tract of land just below Charles Reggio's plantation. The area later

became part of the Linwood Plantation. In 1846, Pointe a la Hache was selected as the new location of the parish seat and courthouse.

Politics in Plaquemines Parish received national notoriety in the Polk-Clay presidential election of 1844. John Slidell, a prominent Louisiana politician, wanted Polk to win the election. Slidell persuaded Judge Leonard of Plaquemines Parish to bring immigrants to Plaquemines who would vote for Polk. Later it was charged that these people were not qualified voters. The Works Progress Administration, Historical Records Survey, discovered in the Acts of Conveyances that these people had been entitled to vote because they had owned property. The notary who signed these conveyances was Judge Leonard. Polk won the presidential election in spite of this maneuver.

The population of Plaquemines Parish continued to grow in the nineteenth century. The census of 1810 reports that there were 571 whites, 239 free blacks, and 753 slaves (Armstrong n.d.:10). Most of these people were French, Spanish, and English Americans. By 1840, the population had increased to 5,060 people. This included 1,351 whites, 324 free blacks, and 3,385 black slaves (Jackson 1935). In 1860, the population had increased to 8,494, of which 70% were non-white (Newton 1972).

Americans of Irish, English, and Scottish extraction began to settle in Plaquemines Parish immediately after the Louisiana Purchase. The immigration of Yugoslavians began later in the 1840s. Many of these people had been fishermen in their native country, and made a living in Louisiana by harvesting oysters in Plaquemines Parish.

Civil War and Reconstruction (1861-1899). In 1861, Louisiana seceded from the Union and joined the Confederate States of America. Confederate troops seized military installations on the river below New Orleans and laid out two booms of chains and rafts across the river at Fort St. Philip and Fort Jackson to prevent Union warships from proceeding upstream. An additional five hundred men under Colonel Szymanski were stationed behind the Quarantine Station opposite the town of Buras (Wilken 1939).

Shortly after the outbreak of the war, Union ships were stationed off the Gulf Coast and at the mouth of the Mississippi River. On October 12, 1861, Confederate steamers and a ram removed Union ships that were blocking the river.

In April 1862, Flag Officer David G. Farragut and a Union fleet approached the mouth of the Mississippi River. By April 18, the ships were anchored some 3000 yards below Fort Jackson and Fort St. Philip. A battle began on April 18th and lasted until April 24th when the Northern fleet passed the blockade. The Confederate ship *Manassas* caught fire during the battle and sank a short distance downstream (Wilken 1939). At English Turn, the Union ships fired on Confederate soldiers stationed in the area. Farragut's ships continued upriver to New Orleans and captured the city on April 29th. Forts Jackson and St. Philip surrendered on April 28 and remained occupied by Union troops until the war's end. The mayor of New Orleans, John T. Monroe, his secretary, Judge Kennedy, and the Chief of Police were imprisoned at Fort Jackson for protesting General

Benjamin Butler's Woman's Order (Williams and Hebert 1965:4). Black troops garrisoned the fort until 1876, when white troops replaced them.

After the "Battle of the Forts", only a few skirmishes occurred in Plaquemines Parish. During the Union occupation, soldiers were sent downriver to Plaquemines Parish to raid the plantations and settlements for food and booty. One apocryphal account states that a Mr. Grant of the Nairn Plantation had only his old felt hat left after Federal troops raided his home (Wilken 1939:17). Several farmers in Buras also lost money in the so-called "Yankee Horse Racket." Supposedly, when Union soldiers passed by they sold their horses to the Southerners. A few days later other Union troops arrived and confiscated the horses.

Plaquemines Parish had prospered before the Civil War. During the war, Union troops destroyed and confiscated property that belonged to the Confederates. As the Union troops occupied areas, they freed the slaves and many of the plantations in the parish were forced to cease production due to the lack of a labor force, money, and supervisors. Sugar, rice, and other crops that were produced could not always be brought to the markets or were often confiscated by Union occupation troops. The price of food and other basic necessities constantly increased during the war. Although the Civil War ended in 1865, Union occupation troops did not leave Louisiana until 1877.

When many of the Confederate soldiers returned home they found that they owed back taxes and some had heavy mortgages on their farms and plantations. During the war their lands had been neglected and now were in need of repairs and new equipment. Additionally the Freedmen's Bureau Proclamation stated that all former slaves, if hired, had to be paid ten dollars a month in wages (Davis 1961:132). Many planters and farmers who had managed to keep their lands contracted or hired these former slaves. The wives of many black workers took in laundry from white families and/or worked as domestics. Some former slaves bought small tracts of land from plantation owners (Fiehrer 1979:176). Bertrandville, a small town approximately 40 miles south of New Orleans in Plaquemines Parish, was founded by freed slaves.

Little progress or economic recovery was made during Reconstruction. The cultivation and processing of sugar cane declined rapidly in the parish. Sugar cane processing required substantial capital outlays for mills, salaries, equipment, and levee maintenance. Many small planters could not compete with the remaining large plantations, and the land was sold to Northern speculators, or to the few prosperous planters remaining in the parish. A large number of farms and small plantations were also consolidated during this period.

In Plaquemines Parish, several pre-war sugar planters began farming rice. The levees were in poor condition due to neglect during the war and several crevasses had occurred, which inundated some of the fields. These low-lying areas were no longer suitable for sugar cultivation, but were ideal for rice cultivation. Rice cultivation required less capital outlay than sugar cane and production was profitable (Nordhoff 1876:690). By 1875, Plaquemines Parish was the largest rice producing parish in the state (Bouchereau and Bouchereau 1864-1904). The area became known as

Riceland because of the abundance of rice farms. To service the rice planters, two mills were located in Plaquemines Parish. One of these, the Empire Parish Rice Mill, was located across from Magnolia Plantation. The rice yield in Plaquemines Parish averaged 15 barrels per acre with a barrel containing 162 pounds (Baudier 1944:22). Some of the rice planters in Plaquemines imported experienced Chinese laborers to work in the fields. Also, during the late nineteenth century, many European immigrants came to Louisiana, and some moved to Plaquemines Parish to earn a living by harvesting rice and sugar cane. When the harvest ended, many of the immigrants remained and settled in the parish. These immigrants, began another large parish industry, when they planted vegetables and fruit trees along the river banks. In 1888, the *Plaquemines Protector*, a local newspaper, mentioned that truck farming was becoming big business in Plaquemines Parish (Plaquemines Protector 1888).

The crops grown in the parish included oranges, lemons, bananas, olives, pomegranates, tomatoes, broccoli, and artichokes. Orange blossoms also became an important cash crop. The blossoms were made into a syrup and a calmant preparation known as "Syrop de Fleur d'Orange" which was used to quiet teething babies.

In the late 1800s fishing and oystering became commercialized for the first time. Several canneries, such as the Gravolet and Bougon Canneries, were opened to process oysters and other seafood (Davis et al. 1981). Yugoslavian immigrants were the first to begin thinning oyster beds by collecting young oysters and putting them in nearby bays and bayous. This produced better tasting oysters. Several towns in Plaquemines were settled by Yugoslavian oystermen (e.g., Ostrica, Olga, Empire).

On occasion, storms damaged fields and farm buildings in the parish. In 1867, a hurricane caused the levee to break. Another hurricane in 1871 caused considerable damage to fields and houses. Hurricanes occurred often but did not always cause extensive damage. On October 1, 1893, hurricane Cheniere Caminada struck Plaquemines Parish and many of the plantations and farms suffered serious damage. In Buras, Father Bedel buried over 300 people who had been killed as a result of the hurricane (Baudier 1944:28). The towns of Neptune, Ostrica, and Pointe-a-la-Hache were destroyed. Two thousand people lost their lives as a result of the hurricane (Gremillion n.d.:8). The settlements of Bohemia, Union, and Quarantine were almost completely wiped out (Gremillion n.d.:8). Between 1711 and 1944 there were 35 major hurricanes that ravaged the coast of Louisiana.

During Reconstruction there were several yellow fever epidemics in Plaquemines Parish. In 1867, yellow fever broke out in New Orleans and spread to Plaquemines Parish. At least 40 people died at Pointe-a-la-Hache alone (Baudier 1944:19). Another epidemic occurred in 1878, killing more than 20 people at Pointe-a-la-Hache. Ten years later yellow fever broke out at Balize killing many inhabitants. The survivors moved out of Balize and settled upriver at Pilottown (Lincoln 1984:126).

Trains played an important role in the economy of Plaquemines Parish in the late nineteenth century, because crops could be shipped to market faster by train than by steamboat. In 1887, the New Orleans and Gulf

Railroad Company was incorporated, and later that year completed the laying of tracks from Poydras to Bohemia (Meyer 1975:76). This stretch between New Orleans and Bohemia became known as the "Main Line" (Meyer 1975). In 1891, the New Orleans and Southern Railroad bought the New Orleans and Gulf Railroad Company. Five years later, a depression hit Louisiana, and the New Orleans and Southern Railroad sold their rights to the Louisiana Southern Railway Company (Meyer 1975).

Many planters relied on trains to ship their produce to northern markets where it could be sold for high prices. This encouraged the diversification and expansion of truck crops and farms. In 1896, a railroad from Belair to Bohemia was abandoned, but in 1911 it was restored by the Louisiana Southern Railway Company (Baudier 1944:25). The construction of a railway, south of New Orleans, on the west bank of the Mississippi River was promoted by ex-Governor Henry Clay Warmouth and several other sugar planters in the late 1880s. Construction work was begun in 1889, and was completed in 1890. This line became known as the New Orleans, Fort Jackson, and Grand Isle Railroad (Wilken 1939).

During Reconstruction, trade and transportation along the river increased slowly. New methods were developed of clearing silt from the mouth of the river, allowing ships to sail through the passes. In 1879, the Eads Jetties were completed and South Pass was opened to navigation. The Eads Jetties were built by Captain James B. Eads for the United States Corps of Engineers. Captain Eads constructed jetties on willow mattresses sunk with stone and held in place by piles. When Eads' jetties narrowed the channel, the current's velocity increased and sediment was carried out to the Gulf instead of settling along the pass. By 1901, South Pass was the only navigable pass for ships with up to a 26 foot draft (Wilken 1939:14). Pilottown, which is located at the Head of Passes, serves as the modern day "Balize."

Towards the late 1880s there was a gradual shift from producing rice on the Mississippi River to growing rice on the fertile prairies of southwest Louisiana (Greene et al. 1984:195). By 1900 only 25% of Louisiana's rice was grown along the river, compared to 93% only two decades earlier (Greene et al. 1984:195).

Twentieth Century. Very few antebellum plantations in Plaquemines Parish survived into the twentieth century. Among the survivors were Magnolia, Belair, and Braithwaite.

By 1920, many planters in Plaquemines Parish turned to citrus crops and increased truck farming. Crops included beans, cabbage, watermelon, beets, cucumbers, strawberries, tomatoes, and onions. Some of the farmers began planting Easter Lillies as a cash crop in the early twentieth century. The Easter Lilly industry reached its peak in 1937 (Gremillion n.d.).

During the twentieth century several breaks in the levee system caused considerable damage in the parish. Two crevasses developed during the flood of 1922, when a levee broke at Myrtle Grove and another at Poydras. Disaster struck Plaquemines Parish in 1927 when the United States Corps of Engineers blew up the levee at Caernarvon in order to save the city of New

Orleans from flooding. The people in Plaquemines Parish were evacuated to New Orleans to stay in Red Cross camps or with relatives and friends. The Caernarvon crevasse flooded 265,000 acres in Plaquemines Parish. It destroyed homes, crops, and livestock, and directly affected some 4500 people (American National Red Cross 1929:125). When the water finally receded many people did not return. Sugar cane could not be cultivated in most areas as a result of the flooding, making truck farming even more important to the economy of the parish. The parish's economy slowly recovered from the 1927 flood and the effects of a nationwide depression that occurred in the same year.

Fur trapping provided an income for many of the citizens of Plaquemines Parish in the early twentieth century. One third of the furs produced in Louisiana in the 1940s came from Plaquemines Parish (Gremillion n.d.:6).

In the 1900s natural resources such as oil, gas, and sulphur were discovered and commercially produced. Oil was discovered at Lake Washington and Garden Island Bay. The sulphur industry became a major economic force in 1932 when Freeport Sulphur Company began production. The company established the town of Port Sulphur for its employees.

Fishing, oyster harvesting, and shrimping also continue to provide an income for many people of Plaquemines Parish today.

IV. CULTURAL RESOURCE INVESTIGATIONS IN THE NOV AREA

Since 1973, a total of 31 cultural resource management surveys have been conducted within the NOV Area (Figure 4). Five surveys were planned and carried out as projects directly associated with the NOV. The remaining 26 surveys were conducted within the larger NOV Area for various types of construction activities, including borrow areas, revetments, levee setbacks, levee enlargements, levee realignments, dredging, and pipeline construction. These surveys were not conducted as part of the NOV, but the surveyed areas either fall within the defined NOV Area or cross it.

All surveys discussed herein are terrestrial surveys or riverine surveys. Riverine impact areas of the NOV consist primarily of areas designated for borrow. These are discussed in the History of Waterborne Commerce and Transportation report prepared by Coastal Environments, Incorporated (Pearson et al. 1987). These effects will be managed under the Nautical Cultural Resources Management Plan now in preparation (Jennings n.d.).

Narrative discussions of these surveys are provided below. These discussions and the accompanying Table 3 are organized by project type and survey year. Project types are: 1) the NOV Hurricane Protection Project; 2) levee and revetment projects; 3) dredging projects; 4) pipeline projects; 5) remote sensing projects; and 6) inventory level projects. The survey numbers given to the individual projects are arbitrarily assigned using the year of the survey. The first number designates the year within which the survey was conducted and the second is an arbitrary designation. All of the surveys in Table 3 are listed chronologically. In addition, the survey number is referenced in Figure 4 to illustrate the survey location.

Table 3 provides a cross reference and synopsis of the survey data described below. Data incorporated into Table 3 include the proposed project type, the report author, the author's institutional affiliation, who the survey was conducted for, the survey methodology, sites located and potential impacts on the sites, the recommendations of the original surveyors in regard to the cultural resources, and the project's location in relationship to the NOV.

Information for these syntheses are derived from survey data on file at the Louisiana SHPO offices and the NOD-COE. Full references to these reports are incorporated into this document's bibliography. These listings were last updated in July 1987 at the NOD-COE and the Louisiana SHPO offices to add the most recent projects occurring within the NOV Area. Descriptions of the cultural resource sites recorded or encountered during these surveys are provided in Chapter V of this report.

CULTURAL RESOURCE SURVEYS CONDUCTED FOR THE NOV

The following five cultural resource surveys were conducted as part of the NOV. They are listed in chronological order, and are followed by brief descriptions of what was found and recommended during the survey.

Table 3 Cultural Resource Surveys Conducted Within the New Orleans to Venice Hurricane Protection Project Area

Project Type	Survey Report Number	Report Author	Institutional Affiliation	Conducted for	Survey Method	Start Date/End Date	Project Impact	Survey Recommendation	Location within NOV Project Area
Dredging	1973-1	Robert W. Neuman	Louisiana State University	New Orleans District Corps of Engineers	Aerial	18PL27 18PL28	Will Not Be Altered Direct	Proceed Alert Construction	Mississippi River
							16PL25 16PL28 16PL39 16PL46	Will Not Be Altered Will Not Be Altered Will Not Be Altered Direct	Personnel to Retrieve Any Remains Uncovered Proceed Proceed Proceed
							16SL13 16SL12 16SL11 16SL15 16SL16 16SL13	Unknown Unknown Unknown Unknown Unknown Unknown	Alert Construction Personnel to Retrieve Any Remains Uncovered Unknown Unknown Unknown Unknown Unknown
							N/A	N/A	Mississippi River
							None	None	
							16PL147	Not Significant	Reach B-1
							None	Proceed	Reach C
Pipeline	1975-2	Allen R. Sallus Jr.	Gulf South Research Institute	Louisiana Interstate Gas	Aerial	None	N/A	Proceed	West Bank Barrier Levee
Revetment	1976-1	J. Richard Shunkel	University of New Orleans	New Orleans District Corps of Engineers	Surface Subsurface	None	N/A	Proceed	East Bank Barrier Levee
Lower Seabank	1976-2	J. Richard Shunkel	University of New Orleans	New Orleans District Corps of Engineers	Unknown	None	N/A	N/A	West Bank Barrier Levee
Dredging	1977-1	Shirley M. Coghlan	Coastal Environments Inc.	New Orleans District Corps of Engineers	Archival Bulkline	None	N/A	Monitor	West Bank Barrier Levee
Lower Embankment and Seabank	1977-2	J. Richard Shunkel	University of New Orleans	New Orleans District Corps of Engineers	Surface Subsurface	None	None	N/A	West Bank Barrier Levee
Lower Embankment and Seabank	1977-3	J. Richard Shunkel	University of New Orleans	New Orleans District Corps of Engineers	Archival Surface Subsurface	None	N/A	If Buried Resources Found Stop Work	West Bank Barrier Levee

Table 3 (Continued)

Project Type	Survey Request Number	Request Author	Institutional Affiliation	Conducted For	Survey Method	Sites Located	Project Impact	Survey Recommendation	Location within NOV Project Area
Levee Endangerment Sage Protection	1977-1	J. Richard Storkel	University of New Orleans	New Orleans District Corps of Engineers	Archival Surface	None Subsurface	N/A	If Harmed Resources, Found Stop Work	East Bank Barrier Levee
Revetment	1977-5	J. Richard Storkel	University of St. Louis	New Orleans District New Orleans	Archival Corps of Engineers	None Subsurface	N/A Surface	Proceed	West Bank Barrier Levee
Levee Construction	1978-1	George	Louisiana Caselle	Plaquemine SHVO	Archival Partish Commission	10P1.38 Surface Subsurface	Direct	Confine Levee to Existing Ring Levee in Vicinity of Site	West Bank Barrier Levee Bottom Side of Existing Ring Levee in Vicinity of Site
Levee Endangerment Sage Protection	1978-2	Irvin F. Raker	New Orleans District Corps of Engineers	New Orleans District Corps of Engineers	Surface Subsurface	None	N/A	N/A	Reach C
Levee Endangerment	1978-3	Irvin F. Raker	New Orleans District Raker	New Orleans District Corps of Engineers	Surface Corps of Engineers	None	N/A	N/A	Reach C
Hurricane Probes Data	1978-4	Dave D. Davis	Tulane University	New Orleans District Corps of Engineers	Archival Surface Buckular Bankline Subsurface	10P1.8 10P1.13 10P1.34	Outside Outside Outside	No Further Work Not Visited Not Located	Reach A West Bank Barrier Levee
Debris	1978-5	Shirley M. Gagliardi	Coastal Environments Inc.	New Orleans District Corps of Engineers	Bankline Surface	10P1.15 10P1.8 Subsurface	Direct Direct 10P1.16 10P1.13	No Additional Study No Additional Study Direct None	Reach B-1 No Additional Study Aval & Study Further
Levee Section	1978-6	Irvin F. Raker	New Orleans District Corps of Engineers	New Orleans District Corps of Engineers	Surface Subsurface	None	None	Proceed	West Bank Barrier Levee
Hurricane Probes Data	1978-1	Dave D. Davis	Tulane University	New Orleans District Corps of Engineers	Archival Surface Subsurface Surface	10P1.39 10P1.38 10P1.69 10P1.63 10P1.61 10P1.61	Direct in Small Area Outside Direct Direct Direct Direct	Proceed N/A Unknown Unknown Unknown Unknown	East Bank Barrier Levee West Bank Barrier Levee Reach A

Table 3 (continued)

Project Type	Survey Report Number	Report Author	Institutional Affiliation	Conducted for	Survey Method	Sites Evaluated	Project Impact	Survey Recommendation	Location within NOV Project Area
3 Levee & Revetment Items	1980-1	Iraqakis Research Institute	Iraqakis Research Institute	New Orleans District Corps of Engineers Institute	Surface	16PL80	Direct	Unknown	Reach C West Bank Barrier Levee
						16PL71	Direct	Unknown	
						Y16PLC	Unknown	Unknown	
						16PL47	Outside	Unknown	
						16PL79	Direct	Unknown	
						Y16PLH	Direct	Unknown	
						16PL75	Direct	Unknown	
						16PL65	Direct	Unknown	
						16PL68	Direct	Unknown	
						16PL70	Direct	Unknown	
						16PL72	Direct	Unknown	
						16PL73	Direct	Unknown	
						16PL74	Direct	Unknown	
						Kestor Canal II	Direct	Unknown	
14 Levee & Revetment Items	1981-1	Adam G. Garwood	Iraqakis Research Institute	New Orleans District Corps of Engineers Institute	Surface	16PL76	Direct	Unknown	West Bank Barrier Levee East Bank Barrier Levee
						16PL67	Direct	Unknown	
						16PL77	Direct	Unknown	
						16PL78	Direct	Unknown	
						Y16PLA	Direct	Unknown	
						16PL82	Direct	Unknown	
						Y16PLD	Direct	Unknown	
						16PL81	Outside	Unknown	
						16PL83	Direct	Proceed Subsurface Testing	
						16PL84	Direct	Unknown	
Remaric Seeding	1982-1	Ernan C. Garibson	Texas A & M	New Orleans District Corps of Engineers	Unknown	16PL87	Unknown	Unknown	Mississippi River
						16PL88	Unknown	Unknown	
						16PL85	Unknown	Unknown	
Revetment	1982-2	David R. Stuart	Railroad Park Service	New Orleans District Corps of Engineers	Bankline Surface	16SH106	Unknown	Unknown	East Bank Barrier Levee
						16SH108	Unknown	Unknown	
Revetment	1982-3	David R. Stuart	National Park	New Orleans District Corps of Engineers	Surface	16PL91 (CSS Louisiana)	Unknown	Unknown	West Bank Barrier Levee
						16PL92 (CSS Maudslayi)	Unknown	Unknown	
Revetment	1982-2	David R. Stuart	Railroad Park Service	New Orleans District Corps of Engineers	Bankline Surface	None	N/A	Stop Work if Buried Resources Found & Have Professional Evaluation	East Bank Barrier Levee
						None	N/A	Stop Work if Buried	

RECEIVED

[illegible]

Project Type	Survey Report Number	Request Author	Institutional Affiliation	Conducted for	Survey Method	Sites Located	Project Impact	Survey Recommendation	Location within NOV Project Area
						16P186	N/A	N/A	
						16P114	N/A	None	
						16P115	N/A	None	
						16P110	N/A	None	
						16P189	N/A	N/A	
						Promised Land	N/A	None	
						Plantation	N/A	None	
						Mary Plantation	N/A	None	
						Stella Plantation	N/A	None	
						16P187	N/A	N/A	
						16P188	N/A	N/A	
						16P117	N/A	None	
						16P119	N/A	None	
						16P137	N/A	N/A	
						16P135	N/A	N/A	
						16P119	N/A	None	
						16P120	N/A	None	
						16P121	N/A	None	
						16SH122	N/A	N/A	
						16SH106	N/A	N/A	
						16SH101	N/A	None	
						16OR90	N/A	None	
						16OR98	N/A	N/A	
						16P161	N/A	N/A	
						16P150	N/A	N/A	
						16P138	N/A	N/A	
						16P139	N/A	N/A	
						16P168	N/A	N/A	
						16P166	N/A	N/A	
						16P100	N/A	None	
						16P171	N/A	N/A	
						16P164	N/A	N/A	
						16P178	N/A	N/A	
						16P177	N/A	N/A	
						16P167	N/A	N/A	
						16P173	N/A	N/A	
						16P172	N/A	N/A	
						16P170	N/A	N/A	
						16P165	N/A	N/A	
						16P169	N/A	N/A	
						16P183	N/A	N/A	
						16P194	N/A	None	
						Pharmacies	N/A	N/A	
						Parish Courthouse	N/A	N/A	
						16P112	N/A	N/A	
						Waxland	N/A	None	
						Plantation	N/A	None	

Table 3 (Continued)

Project Type	Survey Report Number	Report Author	Institutional Affiliation	Conducted for	Survey Method	Sites Located	Project Impact	Survey Recommendation	Location within NOV Project Area
Remote Sensing	1983-4	John W. Multer	New Orleans District Corps of Engineers	New Orleans District Corps of Engineers	Remote Sensing	16PL113	N/A	None	Mississippi River
						16PL101	N/A	None	
						16PL102	N/A	None	
						16PL103	N/A	None	
						16PL104	N/A	N/A	
						Plantation	N/A	None	
						16PL105	N/A	None	
Revetment	1984-1	R. Christopher Goodwin	R. Christopher Goodwin and Associates	New Orleans District Corps of Engineers	Archival Oral Surface	16PL131	Direct	No Further Work	West Bank Barrier Levee
						16PL132	Direct	No Further Work	
Hurricane Protection	1986-1	Marvin D. Jeter	R. Christopher Goodwin and Associates	New Orleans District Corps of Engineers	Archival Surface Subsurface Bankline	16PL27	N/A	N/A	Reach C
Hurricane Protection	1986-2	R. Christopher Goodwin	R. Christopher Goodwin and Associates	New Orleans District Corps of Engineers	Aerial Archival Surface Subsurface	16PL12	None	Unknown	Reach C East Bank Barrier Levee
						16PL105	Site Previously Destroyed	No Further Work	
						16PL109	None	No Further Work	
						16PL103	Site Previously Destroyed	No Further Work	
						16PL101	Unknown	Unknown	
						16PL103	Site Previously Destroyed	No Further Work	
						16PL104	Direct	No Further Work	
						16PL106	Direct	No Further Work	
						16PL109	None	No Further Work	
						16PL134	None	Subsurface Testing	
						16PL135	None	Subsurface Testing	
						16PL136 - Report	None	No Further Work	
						16PL136 - Form	None	Collect Larger	
						16PL137	None	No Further Work	Representative Sample

Table 3.0 - continued

Project Type	Survey Report Number	Report Author	Institutional Approval	Conducted for	Survey Method	Sites Located	Project Impact	Survey Recommendation	Location within NOV Project Area
						IGPL138	None	Subsurface Testing	
						IGPL139	Direct	No Further Work	
						IGPL140 - Report	None	No Further Work	
						IGPL140 - Form	None	More Investigation	
						IGPL141 - Report	None	No Further Work	
						IGPL141 - Form	None	No Further Work	
						IGPL142	None	No Further Work	
						IGPL143	None	No Further Work	
						IGPL144	None	No Further Work	
						IGPL145	None	No Further Work	
						IGPL146	None	Further Research	
						SS9	None	No Further Work	
						SS7	None	No Further Work	
						SS17	None	No Further Work	
						SS23	None	No Further Work	
						SS28	None	No Further Work	
						SS40	None	No Further Work	
						SS45	None	No Further Work	
						SS59	None	No Further Work	
						SS53	None	No Further Work	
						SS49	None	No Further Work	
						SS70	None	No Further Work	
						SS18	None	No Further Work	
						SS50	None	No Further Work	
						SS64	None	No Further Work	
						SS29	None	No Further Work	
						SS63	None	No Further Work	
						SS79	None	No Further Work	
						SS68	None	No Further Work	
						SS69	None	No Further Work	
						SS74	None	No Further Work	

While the information is only summarized here, the full details of each cultural resource survey may be found in the original documentation.

1978-4 Cultural Resources Survey, New Orleans to Venice Hurricane Protection Levee, Reach A, Plaquemines Parish, Louisiana

Reach A was surveyed by Dave Davis, Marco J. Giordino, and John Hartley in 1978 for the NOD-COE. This reach is located on the west bank of the Mississippi River from City Price to Tropical Bend, Louisiana (river miles 30.4R to 44.9R). The Reach A project involves the enlargement of the existing back levee and proposed borrow areas. No cultural resources were located in the project area. Davis recommended that no further work was necessary (Davis et al. 1978:7).

1979-1 An Archeological and Historic Survey of the Lowermost Mississippi River, Plaquemines Parish, Louisiana

This survey was conducted in 1979 by Dave Davis, John Hartley, and Ruth Weins Henderson for the NOD-COE. The project area consisted of 35 miles of land on the east bank of the Mississippi River (from river mile 10 AHP to 45 AHP) and on the west bank (from river mile 10 AHP to 20 AHP). Areas to be impacted by the proposed construction include the existing levee, the adjoining land, and sections along the batture that will be used as borrow areas. The field survey was preceded by an extensive archival search. The survey was conducted on foot and by boat (Davis et al. 1981:130-133). Trowel testing was judgementslly conducted at certain sites. A total of twenty five sites were recorded within the survey area; of these, two previously recorded sites, Fort Jackson (16PL38) and Fort St. Philip (16PL39), are National Historic Landmarks. Of the 23 remaining sites located in the area, 21 were considered not eligible for the NRHP by Davis et al. (1981:224). Davis et al. (1981) recommended that further work be done at two sites: Ostrica (16PL65), a Yugoslav fishing village; and Dunn's Camp (16PL85), the site of a nineteenth century shipbuilder's shop and home.

1982-6 Cultural Resource Survey of Reaches B-1, B-2, and C (title assigned by ACA-ENMU)

This survey was conducted by J. W. Muller and Tony Flayharty of the NOD-COE in 1982. The survey was completed but the report was not. Information of this survey is derived from field notes and a draft report outline on file at the NOD-COE. Reach B-1 is located on the west bank between Tropical Bend and Fort Jackson. Reach B-2 is located on the west bank from Fort Jackson to Venice. Reach C is located on the east bank between Phoenix and Bohemia. Muller and Flayharty conducted a land and boat survey of the area. According to the field notes, no cultural resources were recorded.

1986-1 Archeological Research to Locate and Identify the French "Fort on the Mississippi" 16PL27 (1700-1707), Plaquemines Parish, Louisiana

This survey was conducted by R. Christopher Goodwin and Associates in 1986. The project area consisted of a 16 acre corridor from the

Mississippi River at Phoenix, Louisiana to a previously identified location of Fort de la Boulaye (16PL27), a National Historic Landmark. The project consisted of an extensive field investigation and archival research to locate the site of Fort de la Boulaye (aka "French Fort on the Mississippi"), the earliest French Fort on the Mississippi River. High and low probability areas for the site location were delineated on the basis of their research, previous research, and the geomorphology of the area (Jeter and Goodwin 1986:2). A study corridor was defined that included a portion of Phoenix and a ridge located in the marsh behind the town. A combination of pedestrian survey, auger testing, magnetometer survey, and spot phosphate testing was utilized during fieldwork. Site 16PL27 was purportedly located at the intersection of a natural levee ridge with the Joe Gravolet Canal 0.5 km north of Phoenix. Testing at this locale yielded no cultural material from an eighteenth century occupation. Testing at the Phoenix Cemetery, however, revealed an earlier component of the cemetery that may relate to the occupation of the Fort on the Mississippi River (Jeter and Goodwin 1986). Jeter and Goodwin (1986) recommended that the previous location be delisted as a National Historic Landmark and that construction in the area be allowed to proceed with the stipulation that a qualified archeologist be present to monitor during levee enlargement along Gravolet Canal.

1986-2 Cultural Resource Survey of the New Orleans to Venice Hurricane Protection Project, Reach C Enlargement, Plaquemines Parish, Louisiana

Reach C was surveyed by R. Christopher Goodwin and Associates in 1986 for the NOD-COE. The project area is located on the east bank of the Mississippi River from Phoenix (mile 60.5L) to Bohemia (mile 42.0L). The project area is 15 miles in length and extends approximately one-half mile in width from the bankline of the Mississippi River to the land side of the back levee (Goodwin et al. 1986). Goodwin and Associates conducted an extensive archival background search and a pedestrian survey and shovel testing of the high priority borrow areas, the project right-of-way, secondary borrow areas, and non-borrow high probability areas. Previously recorded cultural resources within the project area were visited and updated (Goodwin et al. 1986:207-208). Twenty-three archeological sites and twenty structures that "contained requisite integrity and other attributes to warrant state of Louisiana historic standing structure numbers and forms" were recorded and/or updated (Goodwin et al. 1986:41). Three sites, the Urquart Cemetery (16PL134), the Tabony Site (16PL135), and the Phoenix Cemetery (16PL146), were recommended eligible for the NRHP. None of these will be impacted by the NOV. Three sites will be directly impacted by the NOV: the Humble Oil Site (16PL139); Sophie Plantation (16PL104); and Monsecour Plantation (16PL106). None of these sites were considered to possess the qualifications necessary for inclusion in the NRHP. Of the 20 structures, four, the Herbert Williams House (CRIS #HS266; CRIS is a database developed for the COE by the Construction Engineering Research Laboratory [CERL]. CRIS stands for Cultural Resource Information System), the Plaquemines Parish Courthouse (CRIS #HS278), the Old Plaquemines Parish Jail (CRIS #HS279), and the Adema House (CRIS #280) were recommended eligible for the NRHP. None of these structures will be affected by the NOV. One structure, the Phoenix Boarding House (not recorded), and a recent camp will be directly impacted

by the NOV. The Phoenix Boarding House was described briefly during the standing structure reconnaissance for this survey. The structure was not recommended for further recording nor was it recommended eligible for the NRHP. The camp was not evaluated because of its recent age.

**CULTURAL RESOURCE SURVEYS CONDUCTED FOR NEW LEVEE
CONSTRUCTION, LEVEE SETBACKS, LEVEE ENLARGEMENTS,
REVTMENTS, AND SLOPE PAVEMENT CONSTRUCTION**

*1976-1 Cultural Resources Survey of Gravolet, Plaquemines Parish,
Louisiana*

This survey was conducted by J. Richard Shenkel for the NOD-COE. Shenkel conducted a pedestrian survey of 4,800 feet of levee and bank line along the east bank of the Mississippi River. The project area was centered on river mile 51.0L. Shenkel excavated small shovel test units along the project corridor. No significant remains were recorded. Shenkel stated that sections of the project area had already been impacted by previous levee construction and borrow pit activity (Shenkel 1976b:1).

*1976-2 Cultural Resources Survey Empire Lock Forebay and Levee Setback,
Plaquemines Parish, Louisiana*

This survey was conducted by J. Richard Shenkel in 1976 for the NOD-COE. In this survey, Shenkel examined four proposed levee improvement locations on the east bank of the Mississippi River, between levee stations 2731+00 and 2875+06. The borrow was to be taken from battures adjacent to the work locations. Shenkel found no cultural remains on the surface of the proposed levee improvement locations and recommended that the project proceed (Shenkel 1976a:2).

*1977-2 Cultural Resources Survey of the Port Sulphur Levee Enlargement
and Setback, Mississippi River Levees, Buras Levee District, Item
M-41.7-R, Plaquemines Parish, Louisiana*

This survey was conducted in 1976 by J. Richard Shenkel for the NOD-COE. The construction work was to involve the setback and enlargement of the existing levee at Port Sulphur. Shenkel conducted a pedestrian survey with small subsurface tests at intervals of 50 to 150 yards for the length of the project area. No archeological or historic cultural resources were discovered during the field survey within the confines of the project area (Shenkel 1977d:1). Shenkel recommended that the project proceed.

*1977-3 Cultural Resources Survey of the Homeplace Levee Enlargement and
Slope Pavement (Phase II) Mississippi River Levees, Buras Levee
District, Item M-37.7 R, Plaquemines Parish, Louisiana*

This 1977 survey was conducted by J. Richard Shenkel for the NOD-COE. The construction project consisted of the enlargement of existing levees at Homeplace, Louisiana between river miles 37.7R and 35R and two borrow areas near the southern end of the project area. Shenkel excavated small subsurface tests with an entrenching tool at intervals of 50 to 150 yards on both sides of the levee. No archeological or other cultural resources

were discovered during the field survey and it was recommended that the project proceed (Shenkel 1977a:1).

1977-4 Cultural Resources Survey of the Mississippi River Levees, Grand Prairie Levee District, Levee Enlargement and Slope Protection (Phase II) Item M-66 to 59-L, Plaquemines Parish, Louisiana

This survey was conducted by J. Richard Shenkel in 1977 for the NOD-COE. The project consisted of the enlargement of the present levee and resurfacing a concrete slope pavement. The project area is located on the east bank of the Mississippi River between river miles 66L and 59L. Shenkel conducted an intensive on-the-ground survey and shovel testing program. The area surveyed was from the water's edge to the protected side of the right-of-way of Louisiana State Highway 39. Small subsurface test units were excavated on the river side of the levee at intervals of 50 to 150 yards. No archeological or other cultural resources were discovered during the field survey within the boundary of the project area (Shenkel 1977b:7).

1977-5 Cultural Resources Survey of the Point Michel Revetment Item M-46.0 to 42.0 R, Plaquemines Parish, Louisiana

This survey was conducted by J. Richard Shenkel for the NOD-COE in 1977. The project area is located on the west bank between river miles 46R and 42R. Shenkel conducted a pedestrian survey of the project area as well as "an intensive on the ground survey and testing sufficient to make appropriate determination and recommendations" (Shenkel 1977c). Subsurface tests were excavated at intervals of 50 to 150 yards on both sides of the levee. No sites were known or recorded in the area according to Shenkel, and no new sites were located (Shenkel 1977c:6).

1978-1 Cultural Resources Survey of a Protection Levee around Fort Jackson, Plaquemines Parish, Louisiana.

This cultural resources survey was conducted by George Castille of the Louisiana Division of Archeology. The project was conducted for the Plaquemines Parish Commission in 1978 at the site of Fort Jackson and the surrounding area. An 1898 concrete gun emplacement of the northwest fort bastion was located. The feature was partially covered by the batture slope of the existing ring levee at the site. Castille recommended that the proposed levee construction be confined to the batture side of the existing ring levee (Castille 1978:6).

1978-2 Cultural Resource Survey of Grand Prairie Levee District Levee Enlargement and Slope Protection, M-59 to 52-L Mississippi River, Plaquemines Parish, Louisiana. In-House document prepared by Bert Rader of the U.S. Army Corps of Engineers in 1978.

The project area is located between river mile 59L and 52L on the east bank of the Mississippi River. Rader conducted a pedestrian survey of the proposed levee enlargement corridor concentrating on the area along the batture and the unprotected levee side. Previous road and levee construction had already totally altered the levee. No archeological or other cultural resources were discovered in the project area during the field survey (Rader 1978b:4).

*1978-3 Cultural Resource Survey of the East Pointe a La Hache Ferry
Landing Levee Enlargement Area, Plaquemines Parish, Louisiana*

This report was prepared by Bert Rader of the NOD-COE in 1978. The project area is located around river mile 48.7L. The proposed NOD-COE work was divided into two sections: the proposed borrow area and the levee enlargement. Rader conducted a pedestrian survey of the entire project area. Rader states that no known sites were in the project area and that he found no new sites (Rader 1978a:2-4).

*1980-1 Cultural Resources Survey of Three Mississippi River Levees and
Revetment Items, Plaquemines Parish, Louisiana*

This report was prepared by Iroquois Research Institute for the NOD-COE in 1980. Only two of the items, the Harlem Levee Setback and the Bohemia Revetment, were located in the NOV Area. Research techniques used during the project consisted of extensive archival research, pedestrian survey, and testing. At the Harlem Levee Setback, Iroquois found in-situ brick remains and a large standing house associated with Harlem Plantation (16PL84). Iroquois stated that "the remains at the Harlem Setback are probably associated with the Old Harlem Plantation and are potentially significant to local and regional history and historic archaeology" (Iroquois Research Institute 1980:i). Two areas, designated WP-2 and WP-2b, were defined at the locale. The former was interpreted as the archeological remains of the Harlem Plantation, the latter is the Harlem Plantation Great House. Iroquois recommended that research be conducted to determine the date of construction of the main house and that additional work be conducted in the area of archeological remain prior to construction activity.

The Bohemia Revetment survey area was located on the east bank of the Mississippi River at river mile 46L. At this project area, Iroquois found the remains of an inlet and possible fragmentary wharf (Iroquois Research Institute 1980). The site was designated 16PL83 and was recommended as not eligible for nomination to the NRHP (Iroquois Research Institute 1980:abstract).

*1981-1 Cultural Resources Survey of Fourteen Mississippi River Revetment
Items*

This survey was conducted by Iroquois Research Institute in 1981 for the NOD-COE. The project area contains 14 separate survey areas. Of these, four (Bayou Lamoque, Point Michel, Port Sulphur, and Tropical Bend) are located within the NOV Area. Research techniques used during the project consisted of extensive archival research, pedestrian survey, and testing. No sites were located within these areas (Garson et al. 1982:2-3). It was recommended that construction proceed as planned at these locations.

1982-2 An Archeological Survey of the Proposed Bayou Lamoque Revetment (M-33.5 to 32.1-L), Plaquemines Parish, Louisiana

This survey was conducted in 1982 by David Stuart and Jerome Greene of the National Park Service for the NOD-COE. The project area is located on the east bank of the Mississippi River between river miles 32.1L and 33.5L. Stuart and Greene conducted archival research and a pedestrian and boat survey of the proposed Bayou Lamoque revetment project area and found no significant cultural resources (Stuart and Greene 1983a). According to Stuart and Greene the area had been eroded and silted in by alluvial deposits. The area also was disturbed by previous levee construction (Stuart and Greene 1983a:1).

1982-3 An Archeological Survey of the Proposed Venice Revetment (M-18.7 to 10.5 R), Plaquemines Parish, Louisiana

David Stuart and Jerome Greene of the National Park Service conducted this survey in 1982 for the NOD-COE. The project area is located on the west bank between river miles 18.7R and 10.5R. Stuart and Greene conducted archival research and a pedestrian archeological survey of the proposed Venice revetment. No cultural resources were found. The survey methodology included a reconnaissance from an automobile on the levee and a pedestrian transect survey across the batture at quarter-mile intervals. Stuart and Greene state that over 80% of the surface was closely inspected. No cultural resources were identified in the report (Stuart and Greene 1983c).

1982-4 An Archeological Survey of the Proposed Fort Jackson Revetment (M-23.3 to 21.9; 20.5-R), Plaquemines Parish, Louisiana

This survey was conducted in 1982 by David Stuart and Jerome Greene of the National Park Service for the NOD-COE. The project area is located from river mile 23.3R to 21.9R and at river mile 20.5R. Archival research and a pedestrian survey of the project area were conducted. No cultural resources were identified in the report (Stuart and Greene 1983b).

1983-1 Archeological Survey of the New House Site, Harlem Plantation, Plaquemines Parish, Louisiana

This cultural resource survey was conducted by R. Christopher Goodwin and Associates in 1983 for the NOD-COE. The NOD-COE proposed to realign a portion of the main line levee on the east bank at river mile 56L in Plaquemines Parish. The realignment would impact the Harlem Plantation Great House (16PL84), a NRHP site. The structure is a raised Creole Cottage built circa 1830-1840 (Goodwin et al. 1983). The NOD-COE proposed to move the house from its present location to a site behind the proposed levee realignment. Goodwin and Associates surveyed a 4.1 acre tract of land behind the present house site. A magnetometer and pedestrian survey were conducted along with shovel and probe testing and unit excavations. Goodwin and Associates determined that the relocation corridor and relocation site were free of significant historic archeological features (Goodwin et al. 1983:107-108).

1984-1 Cultural Resources Survey of Five Mississippi River Revetments Items

This survey was conducted in 1984 by R. Christopher Goodwin and Associates for the NOD-COE. One of the revetment projects, the Port Sulphur (Homeplace Plantation) Revetment, is located within the NOV Area. The project area is located on the west bank of the Mississippi River between river miles 38.0R and 38.5R. Goodwin and Associates identified two sites, 16PL131 and 16PL132. The Homeplace site, 16PL131, consists of redeposited historic artifacts in the vicinity of a hospital. The second site, Old St. Patrick's Cemetery, 16PL132, is the location of a late nineteenth and twentieth century church cemetery. A major portion of the cemetery was removed in 1951. Both sites were recommended not eligible for the register by Goodwin and Associates (Goodwin et al. 1984:189).

CULTURAL RESOURCE SURVEYS CONDUCTED FOR DREDGING PROJECTS

1973-1 Archeological Survey of the Proposed Deep Draft Access Project, Louisiana

The survey was conducted by Robert Neuman in 1973 for the Deep Draft Access Project. Neuman states that all of the known sites in the area are "historic structures." He lists Fort St. Leon (16PL35), Fort de la Boulaye (16PL27), Fort St. Philip (16PL39), and Fort Jackson (16PL38). Neuman states that these sites will not be impacted. Neuman also recommended that dredging personnel be made aware of the location of Balize (16PL46) and New Balize (16PL28) (Neuman 1973:1).

1975-1 Archeological Survey of the Mississippi River Outlets, Venice Vicinity, Louisiana

This survey was conducted in 1975 by Robert Neuman for the NOD-COE. Neuman conducted an aerial survey (helicopter) along the routes of Baptiste Collette Bayou and Tiger Pass to determine if archeological deposits would be destroyed. No archeological sites were observed (Neuman 1975:1).

1977-1 Cultural Resources Survey of Grand and Tiger Passes and Baptiste Collette Bayou, Plaquemines Parish, Louisiana

This survey was conducted by Coastal Environments, Inc., in 1977 for the NOD-COE. Coastal Environments conducted a literature search and examined old maps and aerial photos to identify site probability areas. The survey methodology consisted of bankline survey. No sites were located in the impact areas of the project (Gagliano et al. 1978:69). Monitoring of secondary impacts was recommended by Coastal Environments.

1978-5 A Cultural Resources Survey of the Empire to the Gulf of Mexico Waterway, Plaquemines Parish, Louisiana

This survey was conducted by Coastal Environments, Inc., in 1978 for the NOD-COE. Coastal Environments conducted a pedestrian and boat survey of the project area. Augering and shovel testing were conducted within

the survey corridor. A total of five sites were located. Three sites were located that would be affected by dredging of the waterway; Adams Bay (16PL8), Shell Bayou (16PL15), and Orange Bayou (16PL116). None of these three sites were considered eligible for the NRHP. Two sites, Buras Mounds (16PL13) and the Empire Hotel (no state number assigned) were recommended eligible for the NRHP (Gagliano et al. n.d.:1). Neither of these sites are within the project impact corridor.

CULTURAL RESOURCE SURVEYS CONDUCTED FOR OIL AND GAS PIPELINES

1975-2 *Environmental Assessment of Proposed Pipeline Construction in Terrebonne, Lafourche, Jefferson, and Plaquemines Parishes.*

This survey was conducted by the Gulf South Research Institute under the direction of Allen R. Saltus, Jr. Survey methodology consisted of mixed aerial reconnaissance and pedestrian walkover. Seven sites were recorded during the survey. No sites were found to "warrant preservation" (Saltus et al. 1975:31).

CULTURAL RESOURCE SURVEYS CONDUCTED FOR REMOTE SENSING PROJECTS

1982-1 *A Technical Report on a Methodological Evaluation of Underwater Instrumental Search in the Lower Mississippi River, Venice, Louisiana to the Gulf of Mexico*

This survey was conducted in 1982 by Garrison and Baker of the Texas A&M Research Foundation. The survey included a section of river adjacent to the NOV Reach B-2 area near Boothville at the purported location of the CSS *Manassas* (16PL97), as identified in 1981 by Clive Cussler. Two separate surveys with a magnetometer and a sub-bottom profile scan were conducted over the site using shore stations in the Boothville area. A substantial magnetic anomaly was found in the area. The anomaly was interpreted as the wreck site of the *Manassas*. Garrison and Baker also located and recorded the remains of the CSS *Louisiana* (16PL91) on the east bank below Fort St. Philip in a rock breakwater (Garrison and Baker 1982:9).

1982-5 *An Electronic Survey of the Point A La Hache Saltwater Weir, A Protective Feature Within the Mississippi River Ship Channel-Gulf to Baton Rouge Deep Draft Project*

John Muller of the NOD-COE conducted this survey in 1982. Muller used side-scan sonar and a magnetometer to survey various reaches of the Mississippi River where proposed dredging was to take place. Three anomalies were located by both magnetometer and sonargraphs. Identification of these anomalies indicated that none were significant enough to warrant further investigation. All of the anomalies were located outside the impact areas (Muller 1983:2).

1983-2 *Survey of Selected Civil War Naval Engagement Sites in the Area of Fort St. Philip and Fort Jackson, Plaquemines Parish, Louisiana*

This survey was directed by Allen R. Saltus Jr. in 1983 for the the Louisiana Division of Archaeology and the NOD-COE. The project area comprises the Mississippi River bottom from river mile 27.5R near Buras to mile 14R above Venice. Saltus reviewed the historical documents regarding the civil war battle at Fort Jackson and Fort St. Philip to determine the possible location of the reported shipwrecks. Six high probability areas were identified. Saltus (1984:29-31) identifies these areas as:

- Area 1. Ostrica Area from river mile 25L to 27.25L (USS *Varuna*, and CSS *Governor Moore*)
- Area 2. Buras Area from river mile 25R to 26R (CSS *Breckenridge* and CSS *Stonewall Jackson*)
- Area 3. Fort St. Philip/Bolivar Point Area from river mile 19.6L to 22.2L (CSS *Louisiana*, Launch No. 6, CSS *Defiance*, CSS *Mosher*, CSS *Belle Algerine*, CSS *Music*, CSS *Phoenix*, CSS *Warrior*, Fire boats, Obstructions)
- Area 4. Fort Jackson Area from river mile 19.8R to 21.1R (CSS *Star*, CSS *General Quitman*, CSS *Resolute*, Fire boats, Obstructions)
- Area 5. Anglo-Saxon/Anglo-Norman from river mile 17.0L to 18.5L (Anglo-Saxon, Union mortar fleet and dock of Old Quarantine Station)
- Area 6. Boothville Area from river mile 15.75L to 18.5L (Pre-Civil War Steamboat, USS *Maria J. Carlton*, CSS *Manassas*, and Union mortar fleet position)

Saltus tested the high probability areas using both proton precession magnetometer and side scan sonar. The surveys in Areas 2 and 4 were "partially or wholly precluded because of articulated mat revetments extending from the water's edge to below the toe of the river bank, a distance of from 300 to 700 feet" (Saltus 1984:34). Thirteen magnetic anomalies were identified for further analysis and investigation.

Eight of the thirteen magnetic anomalies were selected for inspection by divers. Some of these anomalies were buried under 8 feet of overburden. At Bolivar Point, Saltus found artifacts that were associated with a ship including iron bars, ship nails, articulated timbers, coal, melted brass and solder and ship fittings that suggest the remains of a steam vessel. Saltus believes that this vessel site (16PL97) may have been the remains of the CSS *Warrior*. The Tree Site (16PL96) was a surface scatter of artifacts around a dock structure at Bolivar Point. The artifact collection suggests that the dock was used during the mid to late nineteenth century. In the Boothville area, at approximately river mile 16.7R, one anomaly was associated with the wreck of the CSS *Manassas*. Divers found between 75 and 100 sections of pipe at this location (Saltus 1984).

1983-4 Deep Draft Report: A Survey of the Underwater Portions of the Gulf, Deep Draft Access Project. Venice to the Gulf Segment

This survey was conducted by John Muller of the NOD-COE. Field methodology consisted of sonar mapping combined with magnetometer survey. A total of 144 underwater anomalies were located during the survey. Of these, 33 were judged substantial enough to "warrant further cultural resource investigations" (Muller 1985:1). None of the anomalies were located within projected impact areas.

CULTURAL RESOURCE SURVEYS CONDUCTED AS INVENTORY LEVEL PROJECTS

1983-3 Mississippi River Cultural Resource Study

This is an inventory report prepared by Jerome Greene of the National Park Service in 1983 for the NOD-COE. The report includes a detailed history of Southeastern Louisiana and a listing of known resources in the vicinity of the Mississippi River from data derived from the SHPO files and historic maps. No recommendations were made (Greene et al. 1984).

V. PROJECT RESEARCH DESIGN

INTRODUCTION

Land altering activities associated with the NOV will directly or indirectly affect forty (40) of a total of eighty (80) cultural resource sites located within the NOV Area (see Chapter VIII of this report). These prehistoric and historic cultural resource sites were found and recorded during cultural resource surveys in the NOV Area (see Chapter IV).

This chapter provides a research design for these previously recorded cultural resources and cultural resource management activities. The research design is specific to the NOV and was prepared after all of the relevant cultural resource management projects had been completed and thoroughly reviewed.

This introduction to the research design identifies the prehistoric and historic cultural context for the project. The practical and theoretical significance of the project research design is provided next, followed by a discussion of the theoretical basis for the proposed investigation. Then the anticipated gains in cultural resource knowledge associated with the NOV is presented. The introduction closes with a series of statements concerning the overall significance of the research undertaken as part of the NOV.

After this introduction, several more research design topics are discussed in detail. First is a statement of specific research goals. These goals focus the results of the various cultural resource management projects conducted for the NOV into a framework of interrelated goals, hypotheses, and test implications. Terms used for this research design are defined. A second topic is the specification of research operations. Descriptions of the investigative tools and/or methodologies of the cultural resource management projects undertaken for the NOV occur within this second topic. The third topic concerns populations and sampling design. As relevant to the cultural resource management projects, the sampling design and general population parameters of the cultural resources for the NOV Area are provided. Particular concern is applied to the sampling objectives and strategy of cultural resource management projects. Finally, this chapter closes with a discussion of the cultural resource management projects' analyses and results.

All of these topics focus attention on the formation of the research design, the assumptions made, the methods used, and the analytical results of the cultural resource management projects. The following discussions are somewhat unique in that they are drawn from a series of cultural resource management projects that were undertaken by different researchers focusing on different research objectives. This research design also depends on those researchers' published reports and other documents relevant to the NOV.

Prehistoric and Historic Overview

Southern Louisiana and the NOV Area share a complex prehistoric and historic context. Most (95%; 76 of 80) of the cultural resources identified in the NOV Area are historic. The four prehistoric cultural resources in the NOV Area date to the later portions of the prehistoric period (see Chapter VI).

The comprehensive background prehistoric and historic cultural context is provided in Chapter III. That information is not repeated here; the reader should consult Chapter III for any details that are required during this discussion of the research design. Most of the research design information is historic. This does not mean that the prehistoric cultural resources are any less important; it only indicates the reality that most of the identified cultural resources are historic. This may be as much a factor of geomorphology as anything else. Many prehistoric cultural resources could be in the NOV Area but buried deeply under sediments deposited over the last 2000-3000 years. Of course, the greater number of historic cultural resources, relative to the number of recorded prehistoric cultural resources, in the NOV Area could also reflect that it was more densely occupied during the historic periods.

Practical and Theoretical Significance

Cultural resource management can provide efficient and effective planning for land altering projects that affect cultural resources. As the final report for the NOV, this document provides such planning. This document also guides management considerations concerning cultural resources and provides the theoretical contributions of the NOV.

One major practical aspect of this document is that it establishes a format where by all the known cultural resources are evaluated in a consistent fashion. This document also provides a summary of the known cultural resources, so that the entire project and the recommendations can be commented on by the Louisiana SHPO and the ACHP as one package. Such practical concerns streamlines the consultation process and provides a larger regional context for the recommendations.

The theoretical significance of this NOV final report is, of course, tied to the significance of the cultural resources located within the NOV Area. These cultural resources, when viewed within the appropriate prehistoric and historic cultural context, provide the information that can be used to determine their theoretical significance. The theoretical significance can be applied to individual cultural resources as well as to groups of cultural resources.

Regardless of their specific characteristics (e.g., historic or prehistoric), the cultural resources within the NOV Area should contain information relevant to cultural resource theory and they should be intact and exhibit integrity. Such concerns are described within this document and are fundamental to consistent evaluation.

Theoretical Basis for the Previous Investigations

This document, and the information presented within it, has an underlying theoretical basis. Not only are the cultural resources within the NOV Area important from a practical viewpoint, they also provide an

important theoretical context. Cultural resources must be managed in an effective manner to insure that significant information is preserved. This preservation process is tied into a theoretical basis for implementing cultural resource management.

Cultural resource management depends on current theory of archeology, architectural history, history, and other disciplines. Often cultural resource management provides a way to test important propositions or hypotheses generated by the dynamic development of these disciplines. Cultural resource management is not practiced in a vacuum.

This final report for the NOV depends on the theoretical understanding of previous research in Southern Louisiana. The results of the cultural resource management projects conducted previously in the NOV Area are examined together, not individually, in this document. By combining these previous cultural resource management projects, the theoretical basis for each are merged, and additional theoretical concerns added. Thus, the previous projects complement themselves, achieving a consistent theoretical basis for the entire NOV Area.

Anticipated Gains in Cultural Resource Knowledge

It is important to emphasize that this final report of the NOV will produce gains in cultural resource knowledge. Information about cultural resource sites and their location on the present-day landscape can be used to establish similar information in other parts of Southern Louisiana. The specific data about prehistory and history will complement and add to the Southern Louisiana cultural resource information base. Continued refinement of the correlation of cultural resource site types and geomorphic setting will enable land-use planners to more efficiently and effectively anticipate the character and location of cultural resources.

Significance of the Investigation

Practical Social Implications. Cultural resource management is required by legislation and by general public concern for significant cultural resources and events. While these can be translated into scientific terms, the public does not always understand why certain cultural resources are more important than others. One practical social implication of this report is that it does identify which cultural resources are most important, and why they are so important.

Cultural resources are nonrenewable. If destroyed, any and all information about them can never be reconstructed accurately. An important practical social implication of this report is to provide such information about the cultural resources that are affected by the NOV before those resources are damaged or destroyed. This report focuses the public-supported historic preservation efforts on those cultural resources that provide the most important information about the NOV Area's prehistory and history. For example, for many of the area's people, a knowledge of their ethnic origins is both important and informative.

Knowledge of the prehistoric and historic past benefits the public sector. Important prehistoric and historic cultural resources can be preserved and utilized as tourist attractions that benefit the regional

economy. Preservation of these resources also provides a useful tool for the region's educational system.

Significance for Cultural Resource (Discipline) Theory

This NOV report provides information about the prehistory and history of the NOV Area. It is important to recognize and consider the unique character of the cultural resources in the NOV Area and show how they are important to the discipline of cultural resource management. Testing hypotheses concerning settlement patterns, subsistence, cultural adaptation and change, and population growth in this portion of southern Louisiana will strengthen the discipline of cultural resource management. While not all portions of the archeological record can be expected in the area, there are many cultural resource sites that can be examined within these theoretical positions.

Because of the region's deltaic location, the interplay of culture, the living environment, and geomorphology is a significant contribution. The stratigraphic (if present) and geomorphic setting of cultural resources can provide more information than just location and contemporary environmental setting. If the data exist, then a variety of contextual and physical information can complement each other through a multidisciplinary analysis to provide new syntheses that date geomorphic events, identify where certain types of cultural resources will (or will not) occur, and to reconstruct past local and regional environments.

Management Significance

For management concerns, this NOV Final Report is one major way to provide cost-effective planning and consistent evaluation. Management specialists concerned with cultural resource planning will use this report as a guide to identify those cultural resources in the areas affected by the NOV and isolate those cultural resources that are significant (as per National Register Criteria). In addition, this document provides recommendations for management to consider for those cultural resources that are significant. Those recommendations spell out, given current engineering specifications, how the potential adverse affects of the NOV can be mitigated for each significant cultural resources.

By following consistent evaluation procedures, this NOV Final Report provides important management guidelines for cultural resources. All of the cultural resources within the NOV Area are evaluated together, providing an efficient management technique. Efficiency in the evaluation process provides significant advantages for NOD-COE management.

STATEMENT OF SPECIFIC RESEARCH GOALS

Many research goals could be identified in this final report for the NOV. The previous cultural resource management projects conducted within the NOV Area have already established most of the specific research goals. Our goal here is to synopsize those specific research goals derived from the previous work. This synopsis puts together the previously defined research goals for the NOV Area in one place where researchers and managers can easily search for information. Because of our goal, the previous cultural resource management projects set the tone for the rest of the discussion.

This statement of specific research goals for the NOV cultural resource management projects begins with a series of specific aspects that are the focus of this investigation. These are derived from the Scope of Services that is applicable to the project (see Appendix A). Any hypotheses that are to be tested are listed next, followed by the test implications for these hypotheses. Finally, a series of terms are defined. These terms are defined in the context of this report and serve as a guide for proper interpretation and use of this document.

Specific Aspects to be the Focus of the Investigation

Many cultural resource research goals can be applied to any geographic area. While a list of much researched goals can be expanded to great length, it is more common to identify the most often used goals. These can be obtained from a variety of sources that are anthropological, historical, or have a different focus.

For the NOV final report, several sources were consulted for specific research goals. These included:

- 1) The Louisiana Comprehensive Archaeological Plan (CAP), prepared by Smith et al. (1983);
- 2) Previously published and unpublished cultural resource management reports carried out in the NOV Area (see Chapter IV);
- 3) Research-oriented reviews and syntheses of the prehistory and history of Southern Louisiana.

These sources list a variety of useful research goals. Current cultural resource management theory and research emphasizes a regional approach, testable hypotheses, and the critical examination of culture process.

It is clear from previous research in the NOV Area that many fundamental questions must first be answered before seriously using the contemporary theoretical concerns. Though not always specifically stated in the previous reports, the major theoretical research goals include some aspects of culture history and culture process. While environmental reconstruction is mentioned in the previous reports, it is not a major research goal.

This NOV final report does not include further research into any of the mentioned research goals. Rather, this final report synthesizes the research already completed. No new hypotheses are considered and no tests of any hypotheses are made. These tasks have already been completed in the previous cultural resource management reports for specific projects within the NOV Area.

Definition of Terms

All terms used in this report are ones used in the previous cultural resource management projects undertaken in areas affected by the NOV. These include operational terms for cultural resource site, level of survey intensity, significance, etc. Often the term "site" is used synonymously with the terms archeological site, historical site, and cultural resource site.

Specific terms and their definitions are provided below. Their use in this and previous cultural resource projects provide a consistency for the project.

Intensive Survey: a systematic, detailed field examination of a specified location. An intensive survey usually documents the cultural resources, their significance, and their eligibility for listing in the National Register of Historic Places. Intensive surveys are accomplished by field methods that insure that as close to 100% as possible of the ground surface is viewed by professional archeologists.

Inventory: adequately documented survey records of all prehistoric and historic cultural resources in a specified location. Normally, an inventory is the result of one or more location and identification study.

National Register Criteria: the established criteria for evaluating the eligibility of cultural resources for inclusion in the National Register of Historic Places.

Reconnaissance Survey: an examination of all or part of an area accomplished in sufficient detail to make generalizations about the types and distributions of cultural resources that may be present.

Level of Intensity: a description (usually quantitative) of the coverage applied to a survey project. Surveys of lesser levels of intensity do not examine as much of the surface of an area compared to surveys of higher intensity.

Bankline Survey: an intensive survey conducted along the bank of the Mississippi River. Bankline surveys may or may not include pedestrian survey.

Specification of Research Operations

Research operations applied to the NOV Final Report are relatively few. This situation developed because most of the previous cultural resource management projects contained their own research operations. The NOV Final Report does not duplicate those efforts. Instead a summary of them is presented.

Description of Investigative Tools or Methodologies

Several methodologies were followed for cultural resource management projects undertaken in the area affected by the NOV. These are detailed below.

Field Methodology. All of the cultural resource management projects summarized here were conducted within the NOV Area. All of the areas examined during these previous cultural resource management projects were different portions of the NOV. They were selected to provide cultural resource management examination and evaluation of those specific areas. The selection was based on the need to gather such information before land-altering activities begin for the NOV.

The specifics concerning the exact location of the surveys, the surface visibility encountered during the surveys, and total acreage are found in the individual cultural resource management reports; these details do vary from project to project.

Some recording techniques varied between projects, while other techniques did not. Generally, all cultural resource sites found in the NOV Area were mapped and recorded using standard archeological techniques. Photographs were almost always used as additional documentation, but those were not always present in the reports. It is assumed that such photodocumentation is curated at the NOD-COE or at those institutions that conducted the cultural resource management work.

A review of the previous cultural resource management projects conducted within the NOV indicates that all surveys were intensive. The surveys attempted to examine as much of the ground surface as possible during fieldwork. Many projects (48%; 15 of 31) used a subsurface testing program in conjunction with the field survey. All of the subsurface testing programs placed shovel tests and/or trowel tests at certain intervals during the survey. Depth of these tests did not exceed 50 cm.

Data collection at the cultural resource sites in the NOV has not, for the most part, been a major research activity. A majority of sites have had no surface or subsurface data collected from them; only the documentation from site forms and/or cultural resource management reports can be used. Systematic testing was conducted at two cultural resource sites: 16PL27 and 16PL84a (Jeter and Goodwin 1986; Goodwin et al. 1983). Systematically placed test pits and test trenches were used at 16PL84a to determine the potential for historic cultural resources in an area where the Harlem Plantation was to be relocated (Goodwin et al. 1983). Systematically placed test pits were used to search for 16PL27 (Jeter and Goodwin 1986).

Testing techniques applied to the cultural resources within the NOV have been used to determine if subsurface cultural resources exist at certain localities. As a discovery or exploratory tool, the testing techniques have emphasized speed and openness. Gathering information for other questions or problems has not been an aspect of the testing techniques used at cultural resource sites in the NOV Area.

Populations and Sampling Design

No samples or sampling design are associated with the NOV Final Report. With a few exceptions (see Chapter IV), all areas directly or indirectly affected by the land altering activities associated with the NOV have been surveyed, so all known cultural resources have been recorded. No control population is necessary or appropriate for the cultural resource management concerns of the Final Report of the NOV.

A clear objective and strategy of the cultural resource management projects is associated with the NOV. All cultural resources within the NOV Area were to be recorded and submitted to a consistent evaluation process. As a strategy, pedestrian cultural resource surveys have examined all the visible ground surface in an effective manner. Shovel and trowel testing extends the probability that all the cultural resources have been located.

VI. CULTURAL RESOURCES WITHIN THE NOV AREA

The following chapter consists of narrative descriptions of all cultural resource sites recorded during inventory and intensive survey level cultural resource identification and evaluation projects conducted within the NOV Area. All sites discussed in this report are terrestrial sites. Maritime sites (shipwrecks) within potential impact areas of the NOV are discussed in the History of Waterborne Commerce and Transportation report prepared by Coastal Environments, Incorporated (Pearson et al. 1987). These nautical cultural resources will be managed under the Nautical Cultural Resources Management Plan now in preparation (Jennings n.d.).

A total of 80 previously recorded sites are known to be located within the NOV Area (Figure 5; Table 4; Appendix D). Of these, three sites are National Historic Landmarks: Fort de la Boulaye (16PL27), Fort Jackson (16PL38), and Fort St. Philip (16PL39). One site, Harlem Plantation, has two spatially discrete components. The first is the archeological remains of the plantation (hereafter designated 16PL84a) and the second is the relocated plantation house (hereafter designated 16PL84b). The site and structure were nominated separately and both were placed on the NRHP in 1983 (Duke Rivet, personal communication April 1987).

As stated previously, these sites were recorded during the course of 31 separate surveys. These reports are consistent in use of terms for site definitions and cultural resource descriptions; however, they are not entirely compatible. For equitable NRHP evaluation of all sites within the NOV area, a consistent and generalized categorization of site types represented within the study area must be made. That is considered next.

Site type categories were derived from a regional database of 3,311 recorded and potential sites in Southeast Louisiana developed and used by the NOD-COE and ACA during the planning stages of the Southeast Louisiana Cultural Resource Management Plan (Montgomery et al. 1988). This database operates within CRIS (Cultural Resource Information System) a prototype database processing program designed by the COE Construction Engineering Research Laboratory (CERL) in Champaign, Illinois.

Following the site type category, descriptive data is presented for each site. Due to the different recording techniques used at each site, the available data is extremely varied. State of Louisiana Site Forms for these sites are included with this document as Appendix C. Additional data may be obtained from the NOD-COE's CRIS database files and/or the Louisiana SHPO.

One must consider the areal and regional relationship of cultural resources to properly evaluate them. To assist in this process, a consistent categorization of the sites under consideration must be made. In the following narrative all cultural resources within the NOV Area are discussed under the site categories presented in Table 5.

Table 4. Cultural Resource Sites Located Within the NOV Area.

Site Number	Other Site Designations	Cultural Affiliation	Site Category	Location within NOV
16PL8	Adams Bay	Plaquemine; Twentieth Century	Prehistoric Shell Midden; Historic Shell Midden; Prehistoric Mound/Earthwork	Reach A
16PL12	Pointe A La Hache; St. Thomas Cemetery and Mission	Plaquemine; Antebellum; Civil War and Reconstruction Twentieth Century	Prehistoric Mound/Earthwork; Prehistoric Shell Midden; Historic Burial/Cemetery	Reach C
16PL13	Buras Mounds	Plaquemine; Mississippian	Prehistoric Mound/Earthwork; Prehistoric Debitage Scatter; Prehistoric Burial; Prehistoric Shell Midden; Prehistoric Earth Midden	Reach A
16PL27	Fort De La Boulaye	Early Exploration Early United States Period	Historic Military	Reach C
16PL36	The Hills	Prehistoric (unknown)	Prehistoric Debitage Scatter; Prehistoric Mound/Earthwork	Reach B-1
16PL38	HS330; Fort Jackson	Early United States Period Civil War and Reconstruction Twentieth Century	Historic Earthworks; Historic Standing Structure; Historic Debris Scatter	Reach B-2 West Bank Barrier Levee
16PL39	HS331; Fort St. Philip	Early Exploration Early United States Period Twentieth Century	Historic Standing Structure; Historic Debris Scatter	East Bank Barrier Levee

Table 4. (Continued).

Site Number	Other Site Designations	Cultural Affiliation	Site Category	Location within NOV
16PL47	HS333; Salt Works Site	Early United States Period Civil War and Reconstruction	Historic Standing Structure; Historic Debris Scatter	East Bank Barrier Levee
16PL48	HS334; The Jump Site	Twentieth Century	Historic Standing Structure	Reach B-2 West Bank Barrier Levee
16PL50	Unnamed Bayou	Historic (unknown)	Unknown	East Bank Barrier Levee
16PL51	Lucas Canal Site	Historic (unknown)	Unknown	East Bank Barrier Levee
16PL61	HS337; Olga	Civil War and Reconstruction Twentieth Century	Historic Debris Scatter; Historic Standing Structure	East Bank Barrier Levee
16PL64	HS339; Point Pleasant Camp	Twentieth Century	Historic Debris Scatter; Historic Standing Structure	East Bank Barrier Levee
16PL65	Bohemia Canal	Twentieth Century	Historic Debris Scatter	East Bank Barrier Levee
16PL66	HS340; Ostrica	Twentieth Century	Historic Debris Scatter; Historic Standing Structure; Historic Shell Midden	East Bank Barrier Levee
16PL67	Jeanfreau	Early United States Period Civil War and Reconstruction Twentieth Century	Historic Debris Scatter	East Bank Barrier Levee
16PL68	Point Bollivar	Early United States Period Civil War and Reconstruction	Historic Debris Scatter	East Bank Barrier Levee

Table 4. (Continued).

Site Number	Other Site Designations	Cultural Affiliation	Site Category	Location within NOV
16PL69	Tabony Cemetery Site	Early United States Period Civil War and Reconstruction Twentieth Century	Historic Burial/Cemetery	Reach C East Bank Barrier Levee
16PL70	Matulich Site	Civil War and Reconstruction Twentieth Century	Historic Debris Scatter	East Bank Barrier Levee
16PL71	HS341: Empire Oil Field I	Civil War and Reconstruction Twentieth Century	Historic Debris Scatter; Historic Standing Structure	East Bank Barrier Levee
16PL72	Haspel and Davis Site	Early United States Period Civil War and Reconstruction Twentieth Century	Historic Debris Scatter	East Bank Barrier Levee
16PL73	Fustich Site	Early United States Period Civil War and Reconstruction Twentieth Century	Historic Debris Scatter	East Bank Barrier Levee
16PL74	Brancovich	Early United States Period Civil War and Reconstruction Twentieth Century	Historic Debris Scatter	East Bank Barrier Levee
16PL75	Nestor Canal I	Early Exploration Early United States Period Civil War and Reconstruction	Historic Debris Scatter	East Bank Barrier Levee
16PL76	Arbula	Civil War and Reconstruction Twentieth Century	Historic Debris Scatter; Prehistoric Debitage Scatter	East Bank Barrier Levee

Table 4. (Continued).

Site Number	Other Site Designations	Cultural Affiliation	Site Category	Location within NOV
16PL77	Barrow and Slatter	Twentieth Century	Historic Debris Scatter	East Bank Barrier Levee
16PL78	Harris Bayou	Twentieth Century	Historic Debris Scatter	East Bank Barrier Levee
16PL79	Meyers Camp	Civil War and Reconstruction	Historic Debris Scatter	East Bank Barrier Levee
16PL80	HS3-2; Adolph's Camp Site	Early Exploration Early United States Period Civil War and Reconstruction Twentieth Century	Historic Standing Structure; Historic Debris Scatter; Historic Burial/Cemetery	East Bank Barrier Levee
16PL81	Live Oak Bayou	Prehistoric (unknown)	Prehistoric Debitage Scatter	East Bank Barrier Levee
16PL82	Dunn's Camp Site	Early United States Period Civil War and Reconstruction Twentieth Century	Historic Debris Scatter	East Bank Barrier Levee
16PL83	WP4-1	Twentieth Century	Historic Debris Scatter	Reach C
16PL84a	Harlem Plantation Site	Civil War and Reconstruction Twentieth Century	Historic Debris Scatter	Reach C
16PL84b	Harlem Plantation - Great House	Early United States Period Civil War and Reconstruction Twentieth Century	Historic Standing Structure	Reach C
16PL95	22A	Early United States Period Civil War and Reconstruction Twentieth Century	Historic Debris Scatter	East Bank Barrier Levee

Table 4. (Continued)

Site Number	Other Site Designations	Cultural Affiliation	Site Category	Location within NOV
16PL96	Tree Site	Early United States Period Civil War and Reconstruction	Historic Debris Scatter	East Bank Barrier Levee
16PL100	Quarantine Lodge	Early United States Period Civil War and Reconstruction Twentieth Century	Unknown	East Bank Barrier Levee
16PL103	Bellevue Plantation	Early United States Period Civil War and Reconstruction	Unknown	Reach C
16PL104	Sophie Plantation	Early United States Period Civil War and Reconstruction	Historic Debris Scatter	Reach C
16PL106	Monsecour Plantation	Early United States Period Civil War and Reconstruction	Historic Debris Scatter	Reach C
16PL108	Union Plantation	Early United States Period Civil War and Reconstruction	Unknown	Reach C
16PL131	Home Place	Twentieth Century	Historic Debris Scatter	Reach A
16PL132	Old St. Patrick's Cemetery	Civil War and Reconstruction Twentieth Century	Historic Burial/Cemetery	Reach A
16PL134	Urquhart Cemetery	Early United States Period Civil War and Reconstruction	Historic Burial/Cemetery	Reach C
16PL135	HS355: Tabony Plantation	Early United States Period Civil War and Reconstruction Twentieth Century	Historic Debris Scatter; Historic Standing Structure	Reach C

Table 4. (Continued).

Site Number	Other Site Designations	Cultural Affiliation	Site Category	Location within NOV
16PL136	P. Adema Site	Twentieth Century	Historic Debris Scatter	Reach C
16PL137	Nero 2	Twentieth Century	Historic Debris Scatter	Reach C
16PL138	Bohemia Cemetery	Twentieth Century	Historic Burial/Cemetery	Reach C
16PL139	Humble Oil Site	Twentieth Century	Historic Debris Scatter	East Bank Barrier Levee
16PL140	HS356; Bohemia Pumping Station	Civil War and Reconstruction Twentieth Century	Historic Standing Structure	Reach C
16PL141	Union Plantation Cemetery	Civil War and Reconstruction Twentieth Century	Historic Burial/Cemetery	Reach C
16PL142	Gravolet Canal Site	Twentieth Century	Historic Debris Scatter	Reach C
16PL143	Griffin Site	Civil War and Reconstruction Twentieth Century	Historic Debris Scatter	Reach C
16PL144	Upper Pointe A La Hache I	Twentieth Century	Historic Debris Scatter	Reach C
16PL145	Upper Pointe A La Hache II	Twentieth Century	Historic Debris Scatter	Reach C
16PL146	Phoenix Cemetery; Fort de La Boulaye	Early United States Period Civil War and Reconstruction Twentieth Century	Historic Burial/Cemetery	Reach C
Y16PLA	Hacks Bayou	Historic (unknown)	Historic Debris Scatter	East Bank Barrier Levee

Table 4. (Continued).

Site Number	Other Site Designations	Cultural Affiliation	Site Category	Location within NOV
Y16PLB	HS299; Zimmerman House	Twentieth Century	Historic Standing Structure	East Bank Barrier Levee
Y16PLC	HS300; Empire Oil Field II	Twentieth Century	Historic Debris Scatter; Historic Standing Structure	East Bank Barrier Levee
Y16PLD	Louis Zetturich	Twentieth Century	Historic Debris Scatter	East Bank Barrier Levee
HS263	None	Twentieth Century	Historic Standing Structure	Reach C
HS264	None	Twentieth Century	Historic Standing Structure	Reach C
HS265	The Jones House	Twentieth Century	Historic Standing Structure	Reach C
HS266	The Herbert Williams House	Twentieth Century	Historic Standing Structure	Reach C
HS267	The Taylor House	Historic (unknown)	Historic Standing Structure	Reach C
HS268	None	Civil War and Reconstruction	Historic Standing Structure	Reach C
HS269	Frenchmen's House	Historic (unknown)	Historic Standing Structure	Reach C
HS270	The Constance House	Twentieth Century	Historic Standing Structure	Reach C
HS271	None	Historic (unknown)	Historic Standing Structure	Reach C
HS272	LaFrance House	Historic (unknown)	Historic Standing Structure	Reach C
HS273	The Chanove House	Civil War and Reconstruction	Historic Standing Structure	Reach C

Table 4. (Continued).

Site Number	Other Site Designations	Cultural Affiliation	Site Category	Location within NOV
HS274	The Gatien House	Historic (unknown)	Historic Standing Structure	Reach C
HS275	Thomas House	Twentieth Century	Historic Standing Structure	Reach C
HS276	None	Historic (unknown)	Historic Standing Structure	Reach C
HS277	None	Twentieth Century	Historic Standing Structure	Reach C
HS278	Plaquemines Parish Courthouse	Civil War and Reconstruction Twentieth Century	Historic Standing Structure	Reach C
HS279	Old Plaquemines Parish Jailhouse	Civil War and Reconstruction Twentieth Century	Historic Standing Structure	Reach C
HS280	Adema House	Twentieth Century	Historic Standing Structure	Reach C
HS281	Buras House	Twentieth Century	Historic Standing Structure	Reach C
HS282	Tabony Plantation House	Early United States Period Civil War and Reconstruction Twentieth Century	Historic Standing Structure	Reach C

Note: HS = Cultural Resource Information System (CRIS) Historic Standing Structure Designation. CRIS is a database in use by the Corps of Engineers.

Table 5. Listing of Sites by Category Within the NOV Area.

Site Categories	Count	Percentage of Total
Prehistoric Sites		
Mounds	4	5.0
Shell Middens	1	1.0
Historic sites		
Military	3	4.0
Ethnographic	3	4.0
Industrial	4	5.0
Plantations	6	7.5
Tenant Farms	1	1.0
Cemeteries	6	7.5
Standing Structures		
Creole Cottages	5	6.0
Creole Houses	2	2.5
Shotguns	9	11.0
Victorian Cottages	1	1.0
Bungalow	1	1.0
Civic Structures	3	4.0
Southern Pyramid	2	2.5
Debris Scatters	26	32.5
Unknown	3	4.0
Total	80	100.0

PREHISTORIC MOUNDS

16PL8 Adams Bay

This site, located along Adams Bay, was originally reported by Kniffen (1936). It consisted of three earth mounds rising 2 to 5-1/2 feet above the marsh along with five small shell heaps. McIntire (1958) identified the site as belonging to the Plaquemine Culture. Davis et al. (1981) visited the site in 1979 and found that the mounds were still there but the shell heaps were not.

16PL12 Pointe a la Hache

This site is located near river mile 50L. The National Park Service recorded the mound and St. Thomas Chapel, which was constructed on top of the mound. Neuman (1977:25) has identified the mound as belonging to the Plaquemine culture. According to Goodwin et al. (1986), the mound and chapel were moved and a levee was constructed over the original site. The "new" mound consists of redeposited fill from the original.

16PL13 Buras Mounds

Located 2.5 miles WSW of Buras, Buras Mounds (16PL13) was originally reported by Kniffen in 1936. McIntire (1958) assigns it to the Plaquemine period. Floyd (1977) reported that the site consists of one large earth and shell mound, two smaller earth and shell mounds, and possibly one other mound.

16PL36 The Hills

The Hills site is located south of Empire waterway. The site was originally reported by Louisiana State University (LSU) (Louisiana State Site Form; Appendix C) as containing four mounds. One was 10 ft high, one was 5 ft high, and two were reported as flat topped. The artifact collection included projectile points, pottery, and faunal material. The site has not been visited in recent years.

PREHISTORIC SHELL MIDDENS

16PL81 Live Oak Bayou

Live Oak Bayou is a prehistoric shell midden located in the Cox Bay oil and gas field. Davis et al. (1981) reported that local informants stated that animal bone, ceramics, and possible human remains were found when the canal was dredged in the 1950s. According to Davis et al. (1981:201), the original ground surface is now buried under 1.2 m of spoil.

HISTORIC MILITARY SITES

16PL27 Fort de la Boulaye (Fort du Mississippi)

This site, a National Historic Landmark, is reportedly located on the east bank of the Mississippi River, 0.5 km north of the town of Phoenix, along the Joe Gravolet Canal. In 1923, when the Gravolet Canal was being excavated, the dredge pulled up a few hewn timbers (NRHP Property Map Form).

Based on historical data, this site was identified as the remains of Fort de la Boulaye (Fort du Mississippi). A recent report by Charles

Pearson (Coastal Environments 1983), and testing by Goodwin and Associates (Jeter and Goodwin 1986), suggest that this not the location of the fort. Jeter and Goodwin (1986) recommended that the locale be delisted from the National Landmark listings. No cultural remains could be found at the original location.

16PL38 Fort Jackson

Fort Jackson is a National Historic Landmark located on the west bank of the Mississippi River across from Fort St. Philip, at approximately river mile 20R. Fort Jackson was built in the 1820s to protect the land upriver from invading forces. The fort is now owned by the Plaquemines Parish Commission and is being used as a museum.

In December 1814, General Andrew Jackson ordered that a battery be constructed across from Fort St. Philip. This battery was to contain five 24-pound cannon (Greene 1982:78). Construction was never completed on this battery (Greene 1982:126). During the Battle of New Orleans, several British ships attempted to sail past Fort St. Philip and the batteries, but were stopped at the bend by American forces at the bend.

It was not until 1822 that the construction of a more permanent military structure was started on the west bank. The new fort was named after General Andrew Jackson. Fort Jackson was a pentagonal structure surrounded by a moat. Construction on the fort began in 1822 and continued for over ten years. Living quarters for the slaves and laborers were located north of the fort. These quarters included a bakery, carpenter's shop, blacksmith's shop, stable, and overseer's house (Greene 1982:128). A hospital was also built outside the north wall of the fort. The hospital was a raised hip-roofed building that had a front porch and contained five wards (Greene 1982:129). The officers' quarters were located outside the fort while the enlisted men's quarters were inside the fort's citadel. (Greene 1982:133).

Construction work on the fort continued throughout the mid-nineteenth century. In January 1861, the Louisiana militia seized both Fort St. Philip and Fort Jackson under orders from the Governor of Louisiana. Confederate troops manned the fort until after the "Battle of the Forts" in 1862, when they surrendered to Union Troops. In April 1862, the Union fleet ascended the river and successfully managed to break through a Confederate blockade. Fort Jackson was shelled continuously during a battle lasting several days by the Union mortar fleet stationed just downriver from the fort. Several accounts made after the battle describe the fort as being heavily damaged. Most of the interior structures were burned and extensive structural damage was caused by mortar fire (Greene 1982:172). After the Confederate surrender of Fort Jackson, the fort was manned by Black troops of the United States Army. On one occasion the Black troops rebelled against their white officer, Lt. Colonel Benedict, because of mistreatment. General Banks, the military governor, sent Ohio troops to reassert control at the fort. The Ohio troops were stationed at a camp just north of the fort. Political prisoners of the federal government were also imprisoned at the fort, including the Mayor of New Orleans, John Monroe, and a New Orleans newspaper editor.

During the remaining years of the Civil War damages to the Fort that occurred during the battle were repaired and several building additions were made, including new officers' quarters, the enlisted men's quarters, and a hospital. The hospital was located outside the fort on the bank of the river. Part of the parapet at Fort Jackson was used as a cemetery during the Civil War. After the war, the dead were removed to the post cemetery at Fort St. Philip.

In 1871 Union troops vacated Fort Jackson. However the fort was still considered important to the defense of the lower Mississippi Valley. In the early 1900s the fort was watched by a caretaker. During World War I, the fort was used as a training facility. The fort was finally abandoned by the military in 1920. Herbert Harvey, a New Orleans photographer bought the fort in 1927 (Greene 1982:202). In 1960 Harvey donated the Fort to Plaquemines Parish. The Parish renovated the fort and turned it into a museum.

16PL39 Fort St. Philip

Fort St. Philip, a National Historic Landmark, is located on the east bank of the Mississippi River across from Fort Jackson at approximately river mile 20L. The fort had numerous military occupations, starting with the French in 1747 and ending with the Americans in 1929. Over the years many structures were built, altered, renovated, and/or destroyed. Davis et al. (1981:106-129) provide a detailed description of the development of Fort St. Philip. The structural remains of Fort St. Philip include a levee around the Fort that was built after the Civil War (Davis et al. 1981:117++), as well as numerous gun emplacements, barracks, officers' quarters, engineering facilities, mess halls, pumping facilities, reservoirs, and magazines (cf. Davis et al. 1981:123). Inside the compound structural remains from the various occupations at the site exist. One of the best sources of information concerning Fort St. Philip is Landry (1938). Fort St. Philip is presently occupied by members of the "Christos Family", a religious-farming community.

HISTORIC ETHNOGRAPHIC SITES

16PL61 Olga

Olga is located on the east bank of the Mississippi River between mile 16L and 17L. This site is the remains of a late nineteenth century Slavic oystermen village. In 1981, Gagliano and Castille recorded the location of this site by using a 1922 USGS map. The site was not visited (Louisiana State Site Form; Appendix C). Davis et al. (1981) visited the site and recorded an elevated earthen platform, which once was the location of the Jurjevich Store, house, wash house, and privy.

According to Davis et al. (1981), the store was still standing when they surveyed the area. It was reported that the house and wash house were destroyed by Hurricane Camille in 1969. Also in the area was the Grusich family oyster shop. Reconnaissance of this site undertaken in 1987 as part of this report indicates that little disturbance had occurred since the last recording effort.

16PL66 Ostrica

The Ostrica Site is located on both sides of the Cuselich Canal on the east bank of the Mississippi River. Ostrica was the site of a nineteenth

and early twentieth centuries oyster factory and Slavic immigrant village. Davis et al. (1981) reported the site as having a potential for gathering information on a river oyster factory and Yugoslavian village. The limited reconnaissance of this site in 1987 (as part of this report) indicates that little disturbance had occurred since the last recording effort.

16PL80 Adolph's Camp

Adolph's Camp is located on the east bank of the Mississippi River below Adolph's Canal. According to Davis et al. (1981), the site includes a wood frame house and a below-ground cemetery. The house is presently occupied and was built by Mrs. Buras' grandfather, Alexander Smith. He immigrated from Sweden and built a house and store on the site. The existing house was built in 1880. Smith ran the store and harvested oysters. The Smith family's descendants have inhabited the area for 175 years. This site was visited in 1987 as part of this report effort. Based on this visit, little or no disturbance has occurred since the last recording effort.

HISTORICAL INDUSTRIAL SITES

16PL47 Salt Works Site

This site was reportedly a salt factory used by the Confederate Army. It was located on the east bank of the Mississippi River at approximately river mile 13L. Historical information located by Davis et al. (1981) suggest that the factory operated before 1860.

The Salt Works Site was originally identified with map evidence used by Gagliano and Castille (Louisiana State Site Form; Appendix C). The site was not actually visited until 1979-80. The surveyors noted then that the site was covered in mud and silt. Structural remains were inundated and visible only at low tide (Davis et al. 1981). Reconnaissance of this site area in 1987 for this report found no structural remains. A crevasse now exists at the site location. In all likelihood the site has been buried or destroyed since.

16PL82 Dunn's Camp Site

Dunn's Camp is located on the east bank of the Mississippi River between Mitchell Light (mile 13.5L) and Adolph's Canal (mile 12.8L). It is an historic artifact scatter found along the edge of the Mississippi River for 20 m and 15 m inland. Subsurface testing in 1980 revealed crushed shell and other debris (Davis et al. 1981). The site was the home of Chip Dunn who ran a shipyard at the site in the late nineteenth century. When Dunn abandoned the site in 1900, it was subsequently used by the local people as a schoolhouse. No standing structures were recorded (Davis et al. 1981). A reconnaissance of this site in 1987 as part of this report, indicated that little disturbance had occurred since the 1981 work.

16PL139 Humble Oil Site

The Humble Oil Site, also known as the Radio Tower site, is found on the east bank of the Mississippi River below Pointe a la Hache. Goodwin and Associates identified and recorded the site (Goodwin et al. 1986). It consists of the remains of a 1930 to 1950s oil company camp. Goodwin et

al. (1986) conducted a surface examination and found that many of the structures had been bulldozed and disturbed during canal construction.

16PL140 Bohemia Pumping Station

The Bohemia Pumping Station is located on the east bank of the Mississippi River just outside the hurricane protection levee behind Pointe a la Hache. Goodwin and Associates conducted a surface examination and recorded the brick foundation of a pumping station. Goodwin et al. (1986) date the site to at least 1903 and associate the site with the nineteenth century rice farming operation at Bohemia Plantation.

HISTORIC PLANTATIONS

16PL84a Harlem Plantation

The site consists of two spatially discrete components of the same site. These two components were evaluated separately for NRHP eligibility and both are listed on the NRHP. For the purpose of clarity, these spatially discrete components are designated in this report as Component A and Component B. Component A is the archeological remains of the plantation. Component B is a raised creole cottage that once served as the great house for the Harlem Plantation. This component B is an historic standing structure and is described later in the standing structure section of this chapter. Both components were originally identified by Iroquois Research Institute (1980) as on the east bank of the Mississippi River at approximately river mile 56L. Component B (the structure) was moved from its original location to another section of land sometime between 1893 and 1920 (Goodwin et al. 1983:33). Archeological features of the original plantation property (Component A) consist of the remains of an earlier great house, slave quarters, and an industrial complex.

16PL108 Union Plantation

Union Plantation is located on the east bank of the Mississippi River at river mile 54.5L. The site was a sugar cane and rice plantation during the nineteenth and early twentieth centuries. The National Park Service located this site from an 1893 Mississippi River Commission map, but did not visit the site (Greene et al. 1984). Goodwin et al. conducted a surface examination and collection during his Reach C survey (Goodwin et al. 1986:317). Goodwin et al. (1986) found no in-situ structural remains or features at the plantation locale.

16PL103 Bellevue Plantation

This site is located on the east bank of the Mississippi River at river mile 55.25L. It was a sugar cane and rice plantation during the nineteenth century. The National Park Service originally identified the site from an 1893 Mississippi River Commission Map but did not visit the site (Greene et al. 1984). Goodwin et al. (1986) report that the main house and slave quarters are destroyed. The entire area has been bulldozed and landscaped.

16PL104 Sophie Plantation

Located on the east bank of the Mississippi River at approximately river mile 59.2L, Sophie Plantation was a sugar cane and rice plantation during the nineteenth century. The National Park Service identified the

possible site location from an 1893 Mississippi River Commission map (Greene et al. 1984). Goodwin et al. (1986) reported that much of the site had been destroyed.

16PL106 Monsecour Plantation

Monsecour Plantation is located on the east bank of the Mississippi River at river mile 60.6L. The site was a sugar cane and rice plantation occupied during the nineteenth century. The site was originally identified from an 1893 Mississippi River Commission map by the National Park Service (Greene et al. 1984). Goodwin et al. (1986) report that the site has been bulldozed.

16PL135 Tabony Plantation

The Tabony Plantation is on the east bank of the Mississippi River between river miles 45L and 46L. The site was a sugar cane plantation during the nineteenth century. Goodwin et al. (1986) identified 24 features at the site, including standing structures and subsurface features. Tabony was the location of the mid to late nineteenth century Bohemia sugar complex. In the 1920s to 1950s, it was the location of the Tabony farmstead.

HISTORIC TENANT FARMS/FARMSTEADS

16PL136 P. Adema Site

The P. Adema Site is found between river mile 54L and 55L on the east bank of the Mississippi River. Goodwin et al. (1986) conducted a surface examination and recorded the burned remains of a house, a standing house, the foundation of two structures, and a trash heap. The artifacts found date to the twentieth century. Not all of the features are intact and/or have integrity. Goodwin et al. (1986:267) interpret the site as a farmstead.

HISTORIC CEMETERIES

16PL69 Tabony Cemetery Site

The Tabony Cemetery Site is located on the east bank of the Mississippi River, some 271 meters downriver from the current Bohemia Canal Salinity Control Structure. Davis et al. (1981) report that 14 cement and brick crypts were found along with one subsurface burial. A local informant reported that there may have been about 20 tombs at the cemetery. The informant stated that a number of families at Union Settlement used the cemetery until the 1920s, when the land became part of the Pointe a La Hache Relief outlet. Some of the families removed their family remains at this time (Davis et al. 1981:143). The tombs have since been vandalized, trampled by cattle, and silted over.

16PL132 Old St. Patrick's Cemetery

The Old St. Patrick's Cemetery is located on the batture side of the west bank of the Mississippi River. According to Goodwin et al. (1984) the cemetery contains sections of above ground tombs on a low mound. Artifacts are scattered about. Goodwin et al. (1984:46-53) state that the site has been impacted by hurricanes, erosion, and revetment construction.

16PL134 Urquhart Cemetery

The Urquhart Cemetery is located on the east bank of the Mississippi River below Bohemia. The cemetery, as described by Goodwin et al. (1986), contains scattered brick and pieces of headstones. Four features were identified: two raised brick crypts and two brick foundations. A broken headstone showed an 1852 date. The cemetery has been vandalized and trampled by cattle. Goodwin et al. (1986:262) state "intact subsurface remains may exist". They regard the site as important because of its association with the adjacent Tabony Plantation (16PL135). The Urquhart family owned the Bohemia Plantation from the mid to late nineteenth century.

16PL138 Bohemia Cemetery

Bohemia Cemetery is found on the east bank of the Mississippi River below Pointe a la Hache. The site was identified and recorded by Goodwin and Associates. Goodwin et al. (1986) conducted a surface examination only. The site consists of five features: two graves with headstones dating to 1958 and 1938, two graves with no markers, and one above ground crypt. The site has been vandalized and trampled by cows. Goodwin et al. (1986) state that no known documents exist concerning the site.

16PL141 Union Plantation Cemetery

The Union Plantation Cemetery, also known as the Old Griffin Cemetery, is located above Davant on the east bank of the Mississippi River. Goodwin et al. (1986) conducted a subsurface examination of the site and found a hand wrought iron cross, one large crypt, two iron spike markers, one cast concrete cross, three grave stones, and three homemade pipe fixture crosses. According to Goodwin et al. (1986), the cemetery has existed since at least the late nineteenth century. An informant reported that the cemetery was a black cemetery and later used as a family cemetery for the Griffin family. Goodwin et al. (1986:320) state that it is possible the cemetery originally was the slave cemetery for Union Plantation.

16PL146 Phoenix Cemetery

The Phoenix Cemetery, located on the east bank of the Mississippi River near river mile 58L was recorded by Goodwin and Associates in 1986. The cemetery dates from the nineteenth to early twentieth centuries. Goodwin et al. (1986) found unmarked burials outside the present cemetery boundaries. This location may also contain the site of the earliest French fort in Louisiana, Fort de la Boulaye (Fort du Mississippi, 16PL27), as suggested by Jeter and Goodwin (1986). The cemetery is in excellent condition.

HISTORIC STANDING STRUCTURES

Creole Raised Cottages

16PL84b Harlem Plantation. As discussed earlier the site consists of two spatially discrete components of the same site. Component A is the archeological remains of the plantation and is discussed under the historic plantations category. Component B, a raised creole cottage, served as the great house for the Harlem Plantation. Component B was originally identified by Iroquois Research Institute (1980). The site is located on the east bank of the Mississippi River at approximately river

mile 56L. Component B (the structure) was moved from its original location to its present location sometime between 1893 and 1920 (Goodwin et al. 1983:33).

HS 266 The Herbert Williams House. The Herbert Williams House is an Acadian cabin possibly built in the late nineteenth century. Goodwin et al. (1986:387) state that the house is almost entirely original with the exception of the aluminum frame windows.

HS 269 The Frenchmen's House. The Frenchmen's House is a Creole Planters house that may date from the late nineteenth century. The house is raised on brick piers and sided with cypress clapboards.

HS 277 No Name. This structure is a raised Creole cottage. The structure has been moved from Bohemia to its present location at Point a la Hache. Goodwin et al. (1986) believe that the structure was built in 1900. The building is in poor condition.

HS 282 Tabony Plantation House. This structure is a raised Creole cottage (Goodwin et al. 1986:390). The house exhibits "inconsistent use of materials (shingles)" and a "severe level of deterioration" (Goodwin et al. 1986:390).

Small Creole Houses

HS 273 Chanove House. This structure is an Acadian cottage sitting on concrete piers. The house was built around 1880 (Goodwin et al. 1986) and is in poor condition.

HS 276 No Name. This structure is described by Goodwin et al. (1986:388) as a "fairly wide Acadian Cottage" on concrete piers with a gallery on front. Goodwin et al. (1986:388) state that the house possesses integrity but does not represent an exemplary Acadian Cottage.

Shotgun Houses

16PL71 Empire Oil Field I. This site is located on the east bank of the Mississippi River at approximately river mile 43L. It is the remains of a shotgun house. No associated household debris was recovered during subsurface testing by Davis et al. (1981).

HS 263 No Name. This structure is a raised shotgun house on brick piers originally built in 1920. Goodwin et al. (1986:363) state that the structure does "possess a reasonable amount of integrity" but that "many outstanding examples still exist."

HS 264 No Name. This structure is a raised shotgun house on brick piers. Built in 1910, it is now in poor condition. Goodwin et al. (1986) state that its structural integrity is questionable.

HS 265 The Jones House. The Jones House is a small shotgun house raised on a combination of cypress posts and brick piers. The house was built in 1930 (Goodwin et al. 1986). According to Goodwin et al. (1986:366) the house does not possess local significance and there are better examples in the region.

HS 267 The Taylor House. This structure is a Creole Plan shotgun (Goodwin et al. 1986:367). According to Goodwin et al. (1986:367) the house has "deteriorated significantly and is in danger of losing structural integrity."

HS 268 No Name. This structure is a front gabled shotgun house. The house is rumored to have been constructed over a 100 years ago (Goodwin et al. 1986:368). The house was moved to its present location in the twentieth century (Goodwin et al. 1986).

HS 270 Constance House. This structure is an L-wing shotgun raised on bricks. The house was built in 1910, and is in excellent shape. The structure was moved to its present site from a nearby location (Goodwin et al. 1986:369).

HS 271 No Name. This structure is a shotgun raised on concrete blocks (Goodwin et al. 1986). Recent additions have been made to the structure.

HS 275 The Thomas House. Built in 1915 the Thomas House is an L-wing shotgun raised on brick piers. Goodwin et al. (1986:372) state that "although the house possesses much of its original character, it has been altered to the point that other L-wing shotguns in the region may be considered more significant."

Victorian Cottages

HS 281 Buras House. The Buras House is a raised Victorian cottage that was constructed sometime before 1915 (Goodwin et al. 1986). Recent modifications have been made including raising the structure, placement of aluminum framed windows, and putting an air conditioner compressor on the front porch (Goodwin et al. 1986:405-406).

Bungalows

HS 274 The Gatien House. This structure is a bungalow raised on concrete block piers. The house has some modifications but remains one of the "most accurate interpretations of a bungalow in the project area" (Goodwin et al. 1986:Appendix A; Site 53). Goodwin and Associates state that "rural bungalows however, are not usually the most outstanding examples of the type" (Goodwin et al. 1986:Appendix A;Site 53).

Historic Civic Structures

16PL100 Quarantine Lodge Site. The Quarantine Lodge site is believed to be located on the east bank of the Mississippi River near Ostrica. This lodge was used from 1870 to 1919 to house immigrants with communicable diseases. The National Park Service identified the possible location of this site from an 1880s Mississippi River Commission map (Greene et al. 1984). Davis et al. (1981) did not locate the remains of this structure. Reconnaissance as part of this report effort, in 1987, indicates that the area is highly disturbed by breaks in the main line river levee.

HS 278 Plaquemines Parish Courthouse. This structure, which still serves as the Plaquemines Parish Courthouse, was built in 1884. The structure was designed and constructed in late nineteenth century Italian

Villa design type. Although the building has been expanded twice, it still retains its original design.

HS 279 Old Plaquemines Parish Jailhouse. The old jailhouse, located behind the Plaquemines Parish Courthouse, was built in 1885. The structure was built in the classical revival style. The jailhouse was built with bricks, then the exterior walls were stuccoed. The jailhouse played an important role in the development of the Plaquemines Parish criminal justice system (Goodwin et al. 1986).

Southern Pyramid House

HS 272 The Lafrance House. This structure is a southern pyramidal roof house that is raised on brick piers. Goodwin et al. (1986:Appendix A; Site 49) state that:

although the roof is not as pointed as others of its type, it represents a combination of design methodologies common in both the pyramid roof type and the French grenier type. This intersection is best illustrated by the integral or carved out porch which is typical of Acadian grenier type houses; pyramid roof houses normally possess attached porches.

HS 280 Adema House. The Adema house, built in 1916, is a late southern Pyramid house with Victorian detailing. A porch extends around two sides of the building. The house is abandoned but still has its original design and component parts (Goodwin et al. 1986). Goodwin et al. (1986) state that the building is eligible for inclusion to the NRHP

HISTORIC ARTIFACT SCATTERS

16PL64 Point Pleasant Camp

Point Pleasant Camp is located on the east bank of the Mississippi River below Hack's Bayou and 1.5 km above Point Pleasant lower light (mile 30.41). Davis et al. (1981) identified this site as a late nineteenth to early twentieth century artifact scatter that extended for 20 ft along the bank and 15 ft inland. Testing revealed no subsurface material. A one-story wood frame building with a corrugated metal roof is located at the site. The building is deteriorated and has been altered from its original design. The house and site were not considered to be eligible for the NRHP by Davis et al. (1981).

16PL65 Bohemia Canal

The Bohemia Canal site is located on the east bank of the Mississippi River, 300 ft downriver from the Bohemia Canal Salinity Control Structure. Davis et al. (1981) identified and recorded the site as the remains of a wood walkway. Several square cut timbers, some bolted together, were found on the inland slope of the levee. Testing revealed no subsurface remains. Goodwin et al. (1986) later found no remains of this site.

16PL67 Jeanfreau Site

This site is located on the east bank of the Mississippi River about 250 ft upriver from Homeplace East Light at river mile 37.5L. The site is

an historic artifact scatter along the riverbank. A wooden revetment is located in front of the scatter. Davis et al. (1981) originally recorded the site. Testing revealed artifacts at a depth of 8 cm. Davis et al. (1981) could not locate any historical documentation regarding the site. The scatter was interpreted as a secondary deposit.

16PL68 Point Bolivar Site and 16PL95 Site 22A

The Point Bolivar Site (16PL68) and Site 22A (16PL95) are located on the east bank of the Mississippi River 50 feet upriver from the Point Bolivar Light (mile 22L). Davis et al. (1981) identified 16PL95 as an historic artifact scatter. Historic materials noted included ceramics, glass, metal, and one French gunflint. No subsurface remains were found during trowel testing. A cement block, which may have served as a light foundation, is located just off the bank. Site 16PL95 is located on the east bank of the Mississippi River at Bolivar Point. In all probability, the same site was also recorded by Saltus (1984), who described it as an historic midden and the remains of an abandoned light. The two site designations are in the same location and bear almost identical descriptions. Thus, they are considered as a single locale in this report.

16PL70 Matulich Site

The Matulich site is on the east bank of the Mississippi River at approximately river mile 43L. The site is an historic artifact scatter of late nineteenth to early twentieth century glass and ceramics. No materials were recovered during subsurface testing by Davis et al. (1981). The site was interpreted as a secondary deposit by Davis et al. (1981).

16PL72 Haspel and Davis Site

This site is an historic artifact scatter located on the east bank of the Mississippi River at river mile 41.5L. When recorded the locale was inundated at high water. Oyster shell was recovered in subsurface tests conducted by Davis et al. (1981). Davis et al. (1981) recommended the site as not eligible for the NRHP.

16PL73 Fusich Site

This site is an historic artifact surface scatter. It is located 700 m downriver from river mile 41.5L. Davis et al. (1981) interpret the archeological materials as a house midden. No associated structures were found during the survey.

16PL74 Brancovich Site

The Brancovich Site is located 50 m downriver from the Humble Oil Loading Dock Light (river mile 40.41). Davis et al. (1981) identified and recorded this site as a mid to late nineteenth century artifact scatter. They mention that the site could have served as a store or other activity area because of the numerous bottle fragments found there. Trowel tests showed cultural material buried to a depth of 10 cm. Davis et al. (1981) recommended that the site was not eligible for the NRHP.

16PL75 Nestor Canal 1

Nestor Canal 1 site is an historic artifact scatter located on the east bank of the Mississippi River, about 50 m upstream from the Nestor Canal Light (river mile 39.7L). The site was identified and recorded by

Davis et al. (1981). At the southern end of the site, a total of seven bricks were found lying flat and may be part of a floor. Subsequent trowel testing produced only oyster shell. Some early artifacts, including a kaolin pipe stem (1650-1800), a ginger bottle, and the base of a bottle (1860-1885), were found. Because of the low density of artifacts Davis et al. (1981) recommended the site as not eligible for the NRHP.

16PL76 Arbula

The Arbula site is approximately 350 m downriver from the Nestor Canal Light (mile 39.7L) on the east bank of the Mississippi River. Artifacts were collected from an area measuring 20 m by 10 m. Historic artifacts found include glass, ceramics, and metal fragments, as well as 14 aboriginal sherds. Davis et al. (1981) inferred that the material was probably washed downriver from the Nestor Canal. Davis et al. (1981) recommend the site as not eligible for the NRHP.

16PL77 Barrow and Slatter Site

This site is an historic artifact scatter located on the east bank of the Mississippi River downstream from the lower Bass loading Dock Light (river mile 35.2L). Davis et al. (1981) note that the site extends 15 m along the bank and 10 m inland. No cultural materials were recovered in subsurface tests. No structural remains were identified. Davis et al. (1981) recommended the site not eligible for the NRHP.

16PL83 WP4-1

This site, identified by Iroquois Research Institute (1980), is located about 3.37 km upstream from the lower edge of the Bohemia Revetment Study Area. The site is a possible dock structure. Several wood beams, bolted together, were found. Goodwin et al. (1986) could not find the site during the Reach C investigations, and they consider it destroyed.

16PL78 Harris Bayou Site

This site is an historic artifact scatter located on the east bank of the Mississippi River 130 m below the Harris Bayou Light (river mile 34.3L). The scatter is 15 m along the bank and 10 m inland. No cultural materials were recovered in subsurface tests (Davis et al. 1981). The Harris Bayou Site is considered not eligible for the NRHP (Davis et al. 1981).

16PL79 Meyers Camp Site

The Meyers Camp Site is on the east bank of the Mississippi River near Baptiste Collette Bayou Light (river mile 11.3L). This site consists of a late nineteenth century artifact scatter extending along the bank for 30 m and 20 m back inland. No cultural materials were recovered during subsurface testing (Davis et al. 1981). The site was once the location of Meyers Camp. No other information is available, except that two children and three adults were reported by an informant to be buried in the area. The area was under water when Davis et al. (1981) visited the site. No standing structures were noted.

16PL96 Tree Site

According to the Louisiana State Site Form (Appendix C), the Tree Site is located 1,160 feet downriver from Light 22 at Bolivar Point in 0 to 4 feet of water. The site is the remains of a dock and old wooden

revetment. Historic artifacts found on the surface include faunal remains, ceramics, bottles, leather shoes, and iron artifacts. This site is currently 0 to 4 feet under water.

16PL131 Home Place

The Home Place site is an artifact scatter located on the west bank of the Mississippi River at river mile 38.6R. The late nineteenth/early twentieth century artifacts at the site are scattered on spoil mounds. According to Goodwin et al. (1984) the site is "virtually destroyed" and they recommended that the site was not eligible for the NRHP.

16PL137 Nero 2

The Nero 2 site is on the east bank of the Mississippi River between river mile 54L and 55L. Goodwin et al. (1986) examined the surface of the site and recorded the remains of an historic twentieth century tenant house. The site has been bulldozed. Goodwin et al. (1986) recommended the site as not eligible for inclusion in the NRHP.

16PL142 Gravolet Canal Site

The Gravolet Canal site is found on the east bank of the Mississippi River at Phoenix, Louisiana. The site was surface examined and recorded by Goodwin and Associates in 1986. The Gravolet Canal site consists of a fallen structure, wooden fence, and a water trough dating possibly to the late nineteenth-early twentieth centuries. Goodwin et al. (1986) state that the site has been disturbed by levee and road work in the area.

16PL143 Griffin Site

The Griffin Site is located on the east bank of the Mississippi River below Phoenix High School. The site was identified by Goodwin et al. (1986) as a late nineteenth to early twentieth century artifact scatter. No subsurface testing was conducted. The area is now an agricultural field and plowing has disturbed the site.

16PL144 Upper Pointe a la Hache 1

This late nineteenth century to present artifact scatter is located below the Pointe a la Hache Courthouse. The site was recorded by Goodwin and Associates (Goodwin et al. 1986), and they consider it to be highly disturbed from road building and hurricane winds.

16PL145 Upper Pointe a la Hache 2

The Upper Pointe a la Hache 2 site is on the east bank of the Mississippi River and directly north of 16PL144. Goodwin and Associates (Goodwin et al. 1986) identify the site as an early twentieth century to present artifact scatter. It has been disturbed by road building in the area. The site is recommended as ineligible for the NRHP (Goodwin et al. 1986).

Y16PL-A Hack's Bayou

The Hack's Bayou site is located on the east bank of the Mississippi River, 380 m downriver from Hack's Bayou. The site was identified and recorded by Davis et al. (1981). Hack's Bayou an accumulation of oyster shell bricks and historic artifacts dating from the early nineteenth to twentieth centuries. The artifacts are eroding out of the bank; the area appears to have been bulldozed.

Y16PL-B Zimmerman House

The Zimmerman site is the remains of a house structure located on the east bank of the Mississippi River between Mitchell Light (river mile 13.5L) and Baptiste Collette Bayou Light (river mile 11.3L). The house is destroyed (Davis et al. 1981:173).

Y16PL-C Empire Oil Field II

The Empire Oil Field II site is located on the east bank of the Mississippi River, downriver from the Point Pleasant Lower Light (river mile 30.4L). The site was identified and recorded by Davis et al. (1981) as the remains of a wood and brick structure. Five wooden pilings exist north of the structural remains. The area is disturbed.

Y16PL-D Louis Zetturich

The site is located 1.5 km is downriver from river mile 15L. Davis et al. (1981) inferred that the site was a secondary deposit. The old levee between Olga and Adolph's Camp is eroding and it is believed the locals were using cultural material as fill (Davis et al. 1981).

UNKNOWN SITES

16PL48 The Jump Site

The Jump site is located on the west bank of the Mississippi River at Venice, Louisiana. This site was originally recorded in 1977 by Gagliano and Castille (Louisiana State Site Form; Appendix C) from an 1884 USGS map. The old USGS map indicated five buildings, which may have been fishing camps at the site. In 1983, National Park Service personnel visited the area and found no structural remains (Greene et al. 1984). The site has been destroyed by an existing industrial facility.

16PL50 Unnamed Bayou (Urrand Bayou)

The Unnamed Bayou Site, or Urrand Bayou Site as it is also known, is on the east bank of the Mississippi River at river mile 18.25L. This site was originally recorded as a structure by Coastal Environments, Inc., from an 1893 USGS Quadrangle map. Coastal Environments' personnel did not visit the site (Louisiana State Site Form; Appendix C). The National Park Service (Greene et al. 1984) includes the site form in their report, but provide no updated information. Davis et al. (1981) does not mention this site in their survey report on the East Bank Barrier Levee although the survey passed through the immediate site area. No information on the type of site is available.

16PL51 Lucas Canal Site

The Lucas Canal Site is located on the east bank of the Mississippi River about 1-1/2 miles below (downriver) from Olga. This site was also identified by Gagliano and Castille in 1981 by using an 1891 USGS map (Louisiana State Site Form; Appendix C). This map indicated a building in the area. The site was not visited by Gagliano and Castille. The National Park Service includes the site form in their report (Greene et al. 1984). Davis et al. (1981) did not record a site in this area.

VII. SYNTHESIS AND FUTURE RESEARCH ORIENTATIONS

SUMMARY OF CULTURAL RESOURCES LOCATED

A total of 80 previously recorded cultural resource sites are located within the NOV Area. Of these, 75 (94%) are associated with historic period occupation and exploitation of the NOV Area. Five sites (6%) are associated with prehistoric occupation and exploitation of the area.

Functionally, the historic sites are separated into the following categories. Three sites (4%) are historic military fortifications. Three (4%) are occupation sites associated with ethnic groups. Four sites (5%) are industrial complexes. Six (7.5%) sites are the remains of plantations. One site (1%) is the remains of a post Civil War tenant farm. Six sites (7.5%) are cemeteries. Twenty three sites (29%) are standing structures dating from the Antebellum period to the twentieth century. Twenty six sites (32%) are historic artifact scatters. Three sites (4%) were recorded from historic maps. No functional data are available for these three sites. The prehistoric sites are separated into two categories. Four (5%) prehistoric sites are mound complexes. One site (1%) is a shell midden.

THE REGIONAL FRAMEWORK

The Louisiana Comprehensive Archeological Plan (CAP) was designed in 1983 as a guide to relevant historic preservation themes for the state (Smith et al. 1983). In the CAP, the state is divided into six Management Units. The NOV Area falls within Management Unit V. Relevant cultural resources for this management unit are identified as "Tchefuncte, Troyville-Coles Creek, and all sites dating to the historic period" (Smith et al. 1983:292).

Twenty five relevant themes were identified for the management unit. Of these themes, the following are applicable to sites recorded in the NOV Area. Themes for the prehistoric period include Mound Building, the Tchefuncte, Marksville, Troyville-Coles Creek, Plaquemine and Mississippian Periods, agriculture, adaptation to the Mississippi river delta and alluvial valleys, and coastal subsistence and settlement patterns. Significant themes for the historic period include Indian contact and acculturation, European adaptation to the Mississippi river delta and alluvial valleys, exploration and colonization, European influence on the landscape of the Mississippi river delta and alluvial valleys, ethnic enclaves, military history, the steamboat era, civil war rivercraft, the towing industry, and culture history (Smith et al. 1983:95-96).

The cultural and functional variety of cultural resources found within the NOV Area have the potential to answer and contribute to almost all of the research themes identified in the CAP for this management unit. This potential, of course, depends in large part on the integrity of the resource.

ENVIRONMENTAL CORRELATIONS

All recorded historic sites within the NOV Area are situated along or in close proximity to the natural levee of the Mississippi River. However, it should be noted that all cultural resource surveys within the NOV Area were confined to this locale also (Figure 4). Other historic sites have been identified on maps outside the NOV Area along active and abandoned distributaries of the river. Additional sites not identifiable from historical data that probably exist in these areas include small trapping and hunting camps and sites associated with historic oyster harvesting activity.

Although a very small number of prehistoric sites are recorded for the NOV Area, the environmental correlations for these are similar to those made for historic site location. Of five prehistoric sites, three were recorded along the natural levee of the river and two are located along active and abandoned distributaries. Several factors contribute to the relative paucity of prehistoric sites recorded within the NOV Area. These include biases in archeological data and problems associated with the area geomorphology. Relatively few surveys have been conducted outside the natural levee of the Mississippi River. In addition, historically recent and often intensive alluviation may have buried prehistoric sites in the NOV Area. Of the cultural resource projects conducted within the NOV Area, none have attempted to quantitatively determine the potential for buried prehistoric sites, and none were required to do so. All subsurface testing in the NOV Area has either been oriented towards location, definition, and sampling of historic sites, or random and/or systematic shovel testing of survey corridors. In the latter, testing rarely exceeded 50 cm in depth. Another factor biasing prehistoric site location along the river is the degree of historic alterations to the landscape. Almost the entire NOV Area has been modified during more than 300 years of historic occupation.

Some of the most apparent modifications have occurred during federal and state channelization and stabilization projects along the banks of the Mississippi River and its passes, channel excavations for logging, oil exploration, and the fishing industry. In addition, urban development and expansion and the clearing of large land tracts for agriculture have extensively modified the landscape along the Mississippi River levee.

FUTURE INVESTIGATIVE NEEDS AND DIRECTION

The need for more intensive anthropological and historical investigations in the NOV Area and surrounding environs cannot be overstated. The Mississippi River alluvial valley and delta region below New Orleans is one of the most culturally rich yet least archeologically and historically understood areas in the United States.

Recognized data gaps include information on prehistoric settlement locations and resource exploitation, historic ethnic enclaves (e.g., Yugoslavians, Blacks), historic resource exploitation (e.g., oystering, fishing, trapping, logging), and small rural kin-based agricultural complexes (e.g., tenant farms, truck farming). Another major gap is the lack of survey data in areas away from the river. Systematic surveys of

active and relict distributaries in the region would provide invaluable comparative information on prehistoric and historic occupation and utilization of the full ecotone.

As stated before, the variety of cultural resources within a small sample of the region (the NOV Area) can answer and contribute to many anthropological research questions and historically significant themes identified at state, regional, and national levels. However, to be able to contribute information, an adequate database must be acquired. This can only be accomplished by more intensive archeological and historical survey and testing programs.

Future investigations must be research-oriented and should focus on factors including the potential for location of surface and buried prehistoric sites. A major database exists concerning the geomorphology of the area. This should be used to design and test models for prehistoric site location. Another future goal should be the refinement of methods for the functional identification and recordation of smaller historical sites associated with the area's diverse ethnic groups and those associated with economic pursuits unrelated to plantation economy. While a relatively large historical and archeological database exists for cultural resources associated with plantation economy and day to day plantation life, very little information is available on sites associated with other contemporaneous cultures. In an area where cultural resources are rapidly vanishing due to both natural and cultural processes, it must be realized that resources such as Yugoslav villages and oyster processing areas, debris scatters, and small trapping and hunting camps can provide valuable data. Despite the inherent difficulties in location and definition of these predominately undocumented site types, extensive recordation of these resources may, in the long term, provide the only mechanism to interpret and describe the patterns and sequence of the more "common" historic occupations in the area.

A last concern is site preservation. The unchecked destruction of cultural resources by natural and culturally induced processes has reached alarming proportions. Efforts to preserve the regional archeological and historical database including research into site stabilization techniques must be greatly expanded if this resource base is to survive into the coming decades.

VIII. MANAGEMENT OPTIONS AND EVALUATIONS

In this chapter all cultural resource surveys conducted for the NOV and all previously recorded cultural resource sites within the NOV Area are evaluated according to the criteria and processes established in the Secretary of the Interior's Guideline's for Identification (Federal Register 48FR44738), 36CFR800 Protection of Cultural Properties; 36CFR60; National Register of Historic Places; 36CFR63; Determinations of Eligibility for Inclusion in the National Register of Historic Places; and 36CFR65; National Landmarks Program. Following these evaluations, management options are presented for completing the NOD-COE obligations for cultural resource identification, evaluation, and mitigation of adverse effects.

EVALUATION OF CULTURAL RESOURCE SURVEYS

A series of steps as outlined below are used to organize this discussion and to determine the remaining steps necessary for completion of cultural resource compliance activity in the NOV Area (Figure 6). The survey data are examined for compliance in terms of meeting the performance criteria established in the Secretary of the Interior's Guidelines for Identification; Performing Identification (Federal Register 1983:44716-44742) and Identification of National Register and eligible properties (36CFR800.4a).

The 31 cultural resource surveys in the NOV Area are reviewed in Chapter IV of this report. In this section, the Secretary of the Interior's Guidelines for Identification are used to address the adequacy of those surveys occurring within indirect and direct impact areas of the NOV and to provide recommendations for completion of cultural resource survey work for the NOV.

Reconnaissance, inventory, and intensive level surveys have been conducted in the NOV Area. To meet federal regulations, the data acquired during these surveys should include background research, an adequate methodology oriented towards the unique environmental parameters of the survey area, and a precise listing and documentation of cultural resources encountered during the course of work. The work, at a minimum, must contain sufficient information for evaluation and justification of the resources potential for inclusion into the NRHP.

The NOV involves the enlargement and upgrading of levees in four reaches and the West Bank Barrier Levee and construction of the East Bank Barrier Levee (Figure 3). In this chapter, the survey work conducted in each project area is reviewed and evaluated in the context of these criteria. These surveys are reviewed on an individual basis as defined below.

These projects are located as follows (see Chapter I for engineering details):

1. Reach A: City Price to Tropical Bend (a distance of 13 miles);

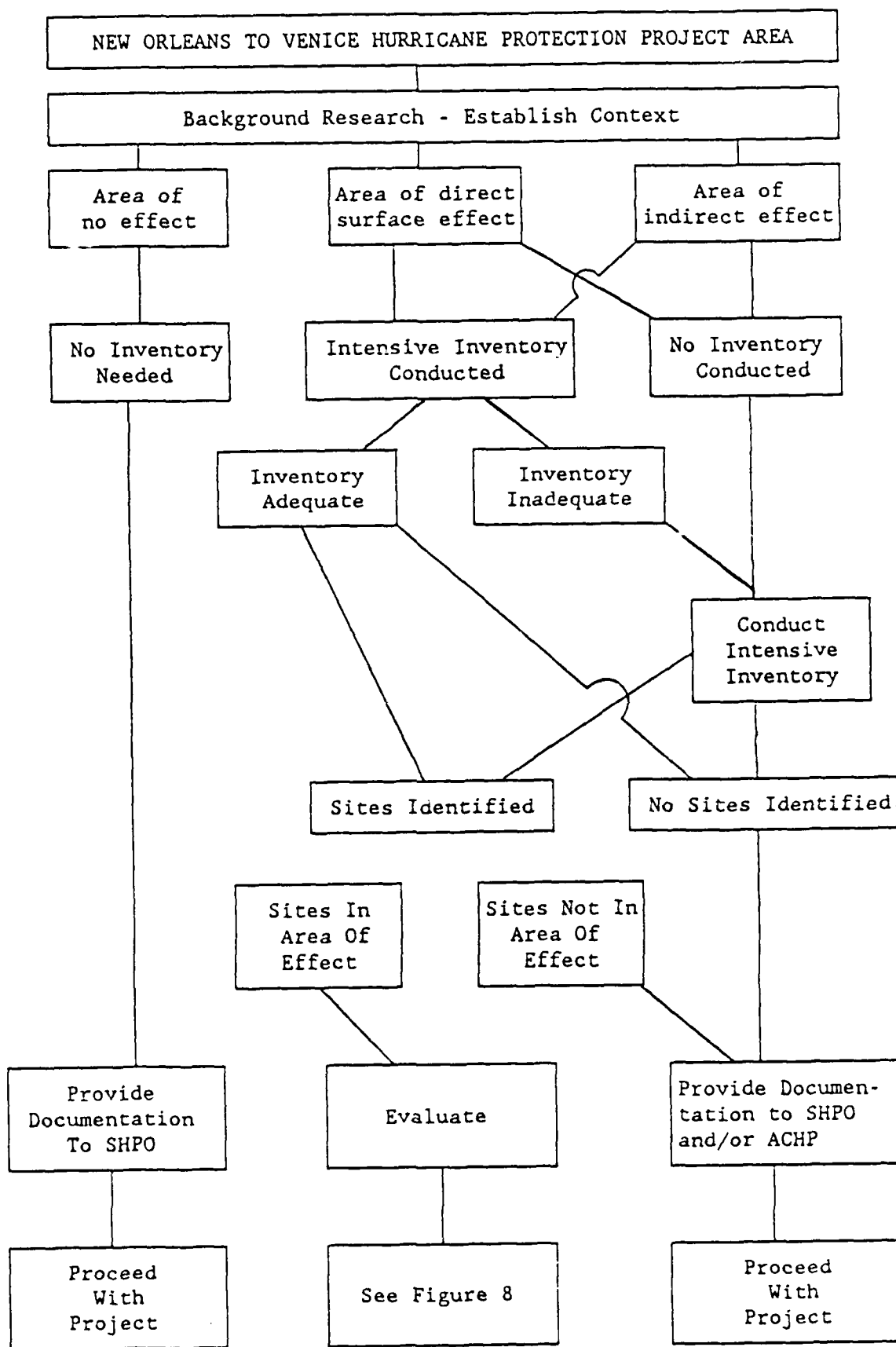


Figure 6. Process applied to evaluation of previous cultural resource surveys in the NOV Area.

2. Reach B-1: Tropical Bend to Fort Jackson (a distance of 12 miles);
3. Reach B-2: Fort Jackson to Venice (a distance of 8 miles);
4. Reach C: Phoenix to Bohemia (a distance of 16 miles);
5. Construction of the East Bank barrier Levee from Bohemia to 10 miles AHP (a distance of 34 miles)
6. Enlargement of the West Bank Barrier Levee from Happy Jack to Venice (a distance of 34 miles)

Reach A: City Price to Tropical Bend

Eight cultural resource surveys have been conducted within and in the vicinity of Reach A (Figure 4). One survey was conducted specifically for the project (Davis et al. 1978). Davis et al.'s survey methodology consisted of archival research, 100% pedestrian survey of the project impact areas, limited subsurface testing, and reconnaissance level survey of locales peripheral to the impact zone. Four projects were conducted as part of dredging projects (Neuman 1973, 1975; Gagliano et al. n.d.; Muller 1983). Two surveys were conducted within the Mississippi River as remote sensing projects for locating shipwrecks (Garrison and Baker 1982; Saltus 1984). One inventory level survey has been conducted in the area (Greene et al. 1984)

Evaluation. The projected impact areas for Reach A have been subjected to 100% pedestrian survey. The level of field survey work meets or exceeds the federal requirements for survey activity used to identify cultural resources. No further survey in this area is recommended.

Reach B-1: Tropical Bend to Fort Jackson and Reach B-2: Fort Jackson to Venice

Ten cultural resource surveys have been conducted within and in the vicinity of Reaches B-1 and B-2 (Figure 4). One survey was conducted specifically for the project (Muller and Flayharty 1982). The report for this survey consists only of a draft outline. It indicates that pedestrian and bankline surveys were conducted. Some areas were not surveyed due to inaccessibility. Davis et al.'s 1978 survey of Reach A and the East Bank Barrier Levee overlap parts of the Reach B-1, and includes all of the Reach B-2 project area (Figure 4; Davis et al. 1978). Four surveys were conducted in the area as part of dredging projects (Neuman 1973, 1975; Gagliano et al. n.d.; Muller 1983). Two surveys were conducted within the Mississippi River as remote sensing projects for locating shipwrecks (Garrison and Baker 1982; Saltus 1983). One inventory level survey has been conducted in the area (Greene et al. 1984).

Evaluation. The Reach B-1 project area has not been subjected to a 100% pedestrian survey and it is unknown whether the methods used by Muller and Flayharty in the original survey of the reach meet the Federal guidelines for adequacy. However, all of the project area is located on an existing levee. Historic maps indicate that no potential historical sites are located within the project impact corridor and no cultural resources have been previously recorded in the area. One locale within

the surveyed area, a segment of natural levee at Empire, is considered to have a potential for prehistoric sites. This area was surveyed by Gagliano et al. (n.d.) as part of the Empire to the Gulf of Mexico Project 2 and no sites were recorded. Given this information, no further survey is recommended for Reach B-1.

Reach B-2 was subjected to 100% pedestrian survey by Davis et al. (1978). The level of field survey work meets or exceeds the federal guidelines for survey activity used to identify cultural resources. No further survey in this area is recommended.

Reach C: Phoenix to Bohemia

Fifteen cultural resource surveys have been conducted within and in the vicinity of Reach C (Figure 4). Two surveys were conducted specifically for the project (Goodwin et al. 1986; Jeter and Goodwin 1986). Jeter and Goodwin's 1986 survey was oriented towards the locating a National Landmark Site the French "Fort on the Mississippi" (16PL27) that was purportedly in the project vicinity. While the fort remains were not located, the survey did establish that the site was probably not situated within the project impact area (Jeter and Goodwin 1986). Goodwin et al.'s (1986) project included extensive archival research, 100% pedestrian survey of the project impact areas, and a reconnaissance level survey of an arbitrary "project area" that surrounded the direct and indirect impact areas of Reach C.

Davis et al.'s (1981) survey of the East Bank Barrier Levee overlaps the southern end of the Reach C project area (Davis et al. 1981). Four levee surveys were conducted in the project area (Shenkel 1977b; Rader 1978a, 1978b; Goodwin et al. 1983). Two revetment surveys were conducted in the project area (Shenkel 1976b; Iroquois Research Institute 1982). Three surveys were conducted as part of dredging projects (Neuman 1973, 1975; Muller 1983). Two surveys were conducted within the Mississippi River as remote sensing projects for locating shipwrecks (Garrison and Baker 1982; Saltus 1984). One inventory level survey has been conducted in the area (Greene et al. 1984).

Evaluation. The projected impact areas for Reach C have been subjected to 100% pedestrian survey. The level of field survey work meets or exceeds the Federal guidelines for survey activity used to identify cultural resources. No further survey in this area is recommended.

East Bank Barrier Levee

Twelve cultural resource surveys have been conducted within and near the vicinity of the East Bank Barrier Levee project. One survey was conducted specifically for the project (Davis et al. 1981). Davis et al.'s 1981 project included archival research, 100% pedestrian survey of the project impact areas and limited subsurface testing on the entire east bank segment, and from Venice to Fort Jackson on the west bank segment. Goodwin et al.'s (1986) survey of Reach C overlaps the northern end of the east bank segment of the East Bank Barrier Levee project area (Goodwin et al. 1986). Two revetment surveys were conducted in the project area (Garson et al. 1982; Stuart and Greene 1983a). Five surveys were conducted as part of dredging projects (Neuman 1973, 1975; Gagliano et al. 1978; Muller 1983). Two surveys were conducted within the Mississippi

River as remote sensing projects for the locating shipwrecks (Garrison and Baker 1982; Saltus 1984). One inventory level survey has been conducted in the area (Greene et al. 1984). Figure 4 provides locational data on these surveys.

Evaluation. The areas affected by the East Bank Barrier Levee project have been subjected to 100% pedestrian survey. The level of research and field survey work in these areas meets or exceeds Federal guidelines for survey activity used to identify cultural resources. No further survey in these areas is recommended.

West Bank Barrier Levee

Twenty-one cultural resource surveys have been conducted within and near the vicinity of the West Bank Barrier Levee project. One survey was conducted specifically for the project (Davis et al. 1981). Davis et al.'s 1981 project included archival research and 100% pedestrian survey of the project impact areas from Venice to Fort Jackson on the west bank of the Mississippi River. Davis et al.'s 1978 survey of Reach A overlaps the northern end of the project area (Davis et al. 1978).

Five levee surveys were conducted in the project area (Shenkel 1976a, 1976b, 1976c, 1976d, 1977a, 1977d; Castille 1978; Rader 1978a). Five revetment surveys were conducted in the project area (Shenkel 1977c; Garson et al. 1982; Stuart and Greene 1983b, 1983c; Goodwin et al. 1984). Three surveys were conducted as part of dredging projects (Neuman 1973, 1975; Gagliano et al. 1978). Four surveys were conducted within the Mississippi River as remote sensing projects for locating shipwrecks (Garrison and Baker 1982; Muller 1983, 1985; Saltus 1984). One survey was conducted as part of an oil and gas pipeline (Saltus et al. 1975). One inventory level survey has been conducted in the project area (Greene et al. 1984). Figure 4 shows the location of these surveys.

Evaluation. The projected impact areas for the West Bank Barrier Levee project from Venice to Fort Jackson have been subjected to 100% pedestrian survey. The level of field survey work in these areas meets or exceeds Federal guidelines for survey activity used to identify cultural resources. No further survey in these areas is recommended.

While no NOV project-specific surveys have been conducted upriver of Fort Jackson, sections of the NOV's direct and indirect impact areas above Fort Jackson to Happy Jack have been surveyed during other NOD-COE levee and revetment projects (Shenkel 1976a, 1976b, 1976c, 1976d, 1977a, 1977c, 1977d; Iroquois Research Institute 1982; Goodwin et al. 1984; Stuart and Greene 1983b). Four locales within this area have not been surveyed (Figure 7). These are: 1) from levee station 550+11.76 to 693 +15; 2) from station 736 +2.81 to 745 +73.06; 3) from station 786 +80 to 1109 +18.53; and 4) from station 1184 +26.47 to 1278.00. The first three locales are within high probability areas for historic sites as identified from information on Mississippi River Commission Maps and other historical maps. Additionally, the lower segment (station 1184 +26.47 to 1278.00), is within a high probability area for the locations of two French and Spanish fortifications predating Fort Jackson (both named Fort Bourbon). Provided all dumping, grading activity, and vehicular traffic associated with the enlargement of the levee in these areas are confined to the

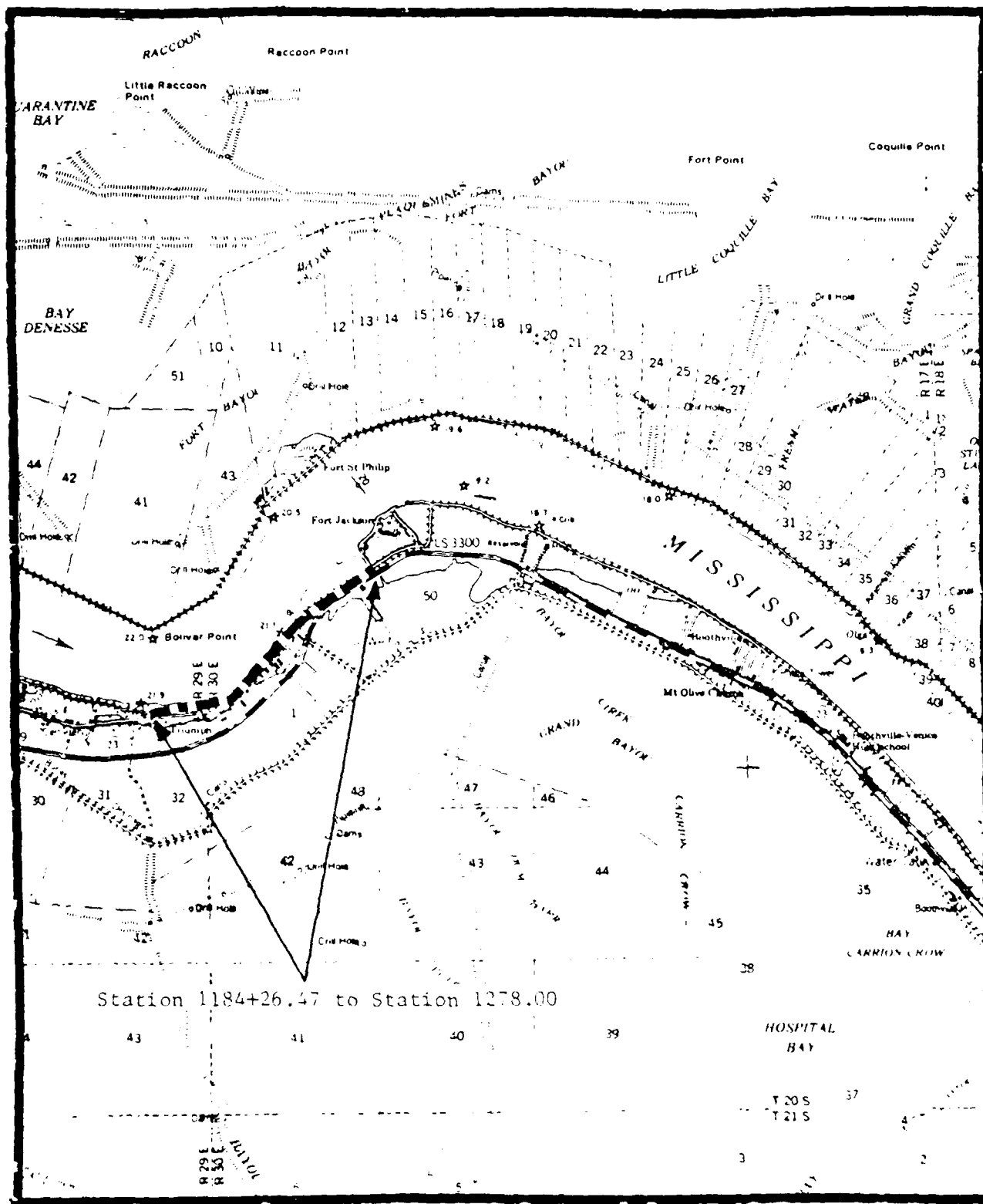


Figure 7. Remaining unsurveyed areas of the NOV. USGS Venice Quadrangle, 15 minute series, 1979.

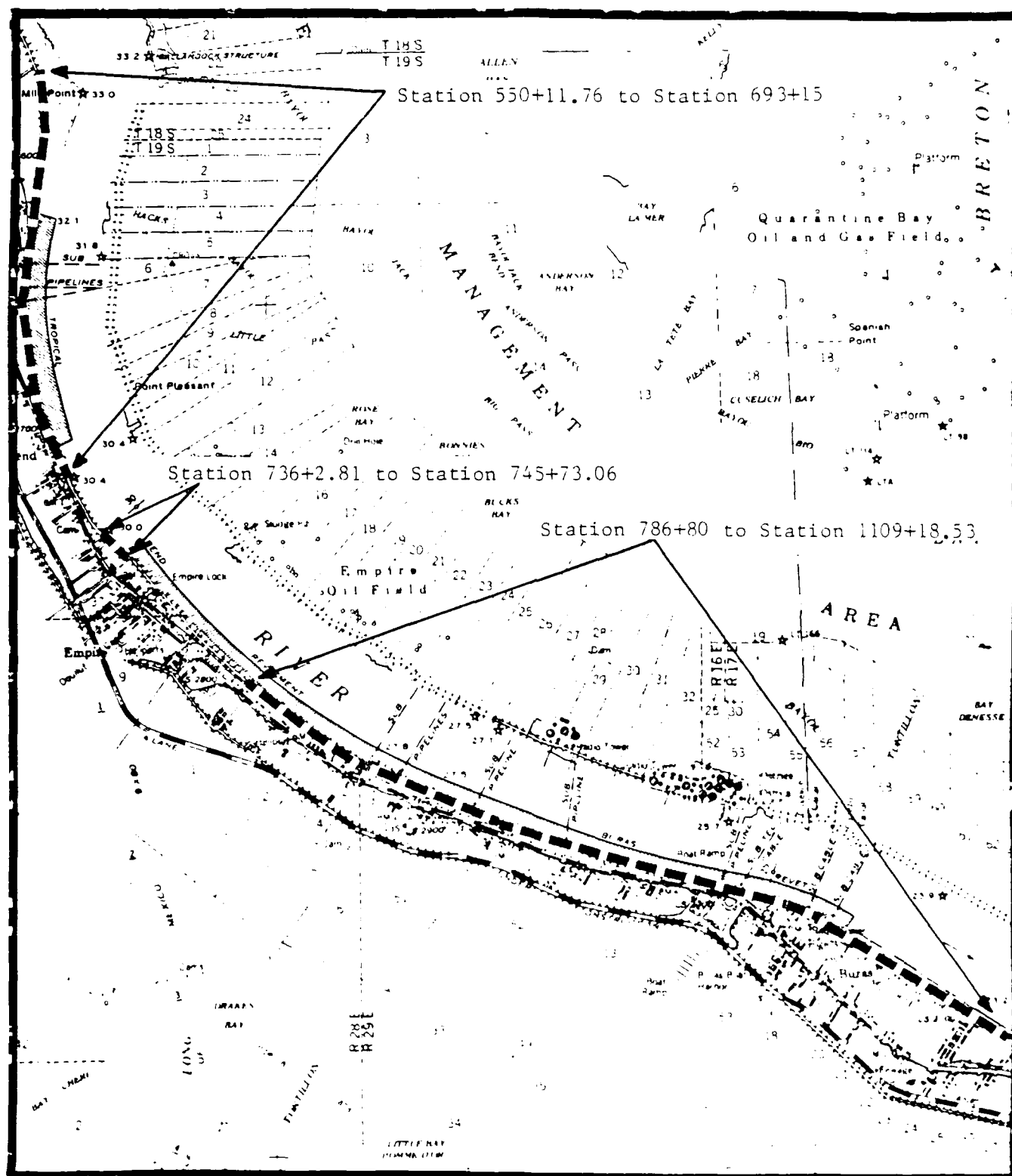


Figure 7. (Continued). USGS Empire Quadrangle, 15 minute series, 1979.

existing disturbed levee ROW, clearance is recommended. However if these activities cannot be confined to this corridor, then a cultural resource survey of these areas and an inventory report following the appropriate Federal guidelines for identification, documentation, and evaluation under 36CFR60.4 is recommended.

EVALUATION OF CULTURAL RESOURCE SITES

In this section, the sites within the NOV Area are evaluated according to the criteria and processes established in the following Federal Regulations: 36CFR800, Protection of Cultural Properties; 36CFR6), National Register of Historic Places; 36CFR63, Determinations of Eligibility for Inclusion in the National Register of Historic Places; and 36CFR65, National Landmarks Program.

A series of decision steps (Figure 8) identifies the actions needed to complete site-related cultural resource compliance activity in the NOV Area. All sites are subjected to evaluation under the Criteria of Effect and Adverse Effect (36CFR800.3[a]). Next, all resources found to be affected by the proposed undertaking are evaluated under the criteria established in "How to Apply the National Register Criteria for Evaluation" (National Park Service 1982) and 36CFR60.4 (Criteria for Evaluation). All sites that meet these criteria are recommended eligible for inclusion into the National Register of Historic Places (NRHP). If a site is evaluated as ineligible for the NRHP according to this criteria, then no further managerial action is required.

For those cultural properties recommended eligible for inclusion into the NRHP, additional recommendations are given. These recommendations follow the mitigative procedures outlined in Section 106 Update/3 "Manual of Mitigation Measures" and the Advisory Council's on Historic Preservation's, "Treatment of Archaeological Properties". Figure 8 illustrates these processes as applied to the evaluation of these sites and recommendations for completion of of cultural resource compliance activity for this project.

Three sites within the NOV area are National Historic Landmarks and as such are listed in the NRHP (36CFR 65.2[b]): Fort de la Boulaye (16PL27), Fort St. Philip (16PL39), and Fort Jackson (16PL38). Because these sites will be impacted by the NOV, Sections 106 and 110f of the National Historic Preservation Act and 36CFR65 (National Landmarks Program) require that recommendations and a data recovery plan be coordinated with the ACHP and the SHPO. The NOD-COE, in consultation with the ACHP, SHPO, and landowners, will decide and approve "methods to avoid, reduce, or mitigate adverse effects" (Section 106) on these three properties. These measures will then be incorporated into a Memorandum of Agreement and implemented by the NOD-COE.

The present landowner(s) of these properties also must be contacted and their consent obtained concerning the recommendations and data recovery plan. Current engineering plans for construction activity at these locales indicate that the projected impacts have been reduced to a minimum. There are no viable alternatives for further reduction of these impacts. Figure 5 illustrates the location of these sites in relationship

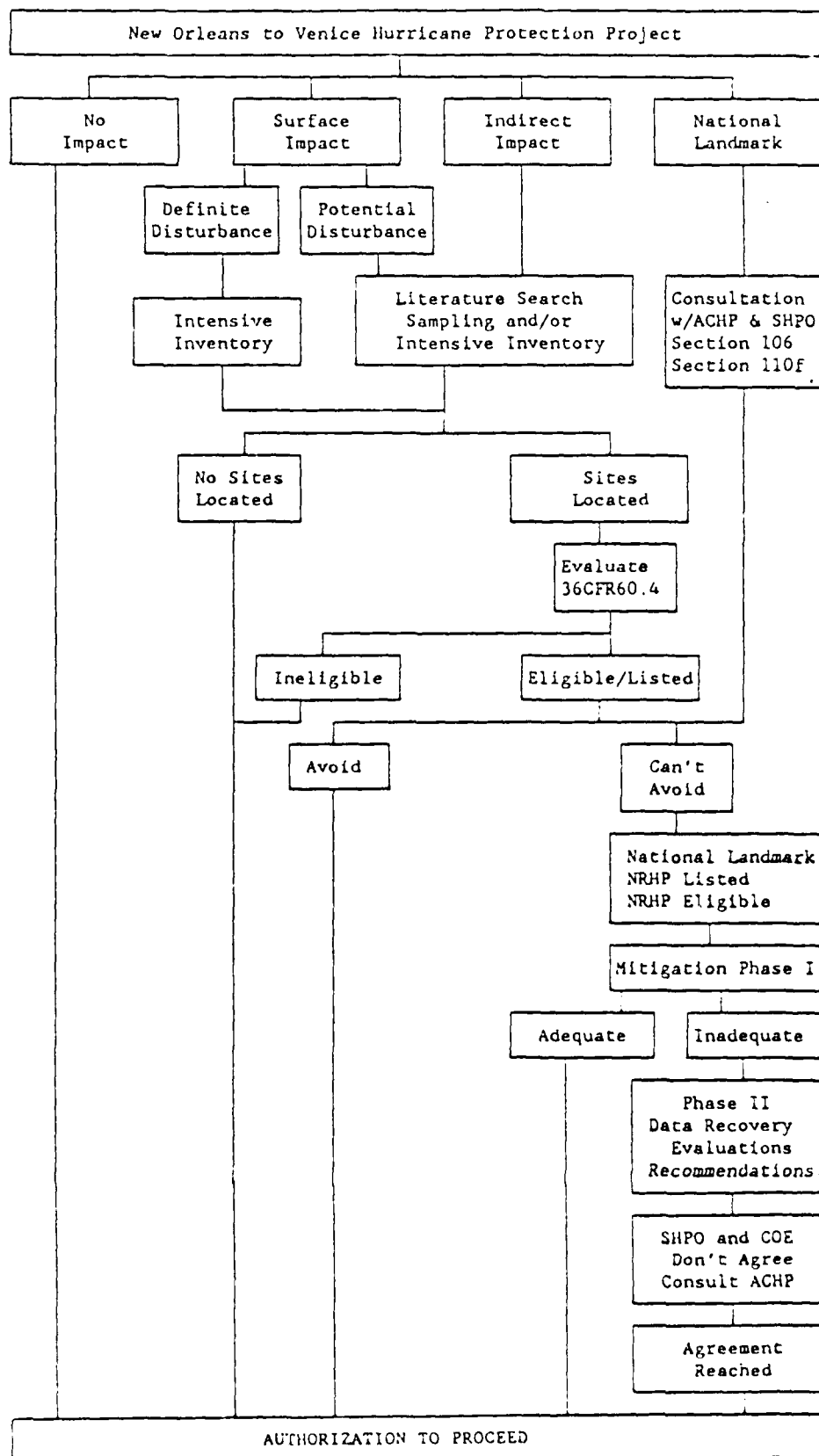


Figure 8. Site evaluation process.

to the proposed NOV. Data recovery plans and recommendations for the mitigation of adverse impacts for each of these sites to these sites are incorporated as Annexes A, B, and C of this report. Construction activity should not proceed at these locations until these measures are completed and approved by all involved parties.

A narrative description of all sites recorded within the NOV Area was presented in Chapter VI. A total of eighty sites are located within the overall NOV Area (Table 4; Figure 5). Of these, 40 sites are within direct and indirect impact areas of the NOV (Figure 5; Appendix D). Three of these 40 are National Historic Landmarks.

Of the remaining 37 sites, 30 have been previously evaluated for NRHP eligibility. Seven have not been evaluated previously. One of these, 16PL140 (Bohemia Pumping Station), was revisited as part of this report's preparation activities to remove a discrepancy between recommendations on the state site form and recommendations in the compliance report.

At the 37 sites impacted by the NOV, sufficient information was compiled by the original recorders to apply the NRHP criteria of evaluation. According to these criteria (36CFR60.4), significant cultural resources are those:

that possess integrity of location, design, setting, materials, workmanship, feeling, and association and

- (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
- (b) that are associated with the lives of persons significant in our past; or
- (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- (d) that have yielded or may be likely to yield information important in prehistory or history.

Also according to 36CFR60, sites, districts, buildings, structures, and objects may be significant on local, state, regional, or national levels. However to be eligible for the NRHP, significant cultural resources must possess integrity of location, design, setting, materials, workmanship, feeling, and association. It is recognized that these criteria are general and sometimes difficult to apply. However there are numerous state and federal guidelines and suggestions for application of these criteria.

In the following evaluations of sites affected by the NOV, we have used the historic and prehistoric data and syntheses as presented in Chapters III and VII in conjunction with the NRHP criteria. Some of these evaluatory criteria, such as feeling and setting, cannot be either

quantified or qualified. But given sufficient familiarity with an area and adequate historical background data, reasonable decisions can be made.

Table 6 presents the evaluations of NOV sites against these criteria. On the basis of these evaluations, four sites are appraised as possessing the requisite integrity of location, setting, and association and data recovery potential (Criteria D) to be recommended eligible for the NRHP. These are, Olga (16PL61), Ostrica (16PL66), Adolph's Camp (16PL80) and Dunn's Camp Site (16PL82) (Figure 5).

In contrast to the previous recommendations made by field investigators at the sites, three of these sites, Olga (16PL61), Adolph's Camp (16PL80), and Dunn's Camp Site (16PL82), are now recommended eligible for the NRHP. Further work was recommended at Ostrica, 16PL66 (Davis et al. 1981). Only one site was previously recommended eligible for the NRHP, Bohemia Pumping station (16PL140) (Goodwin et al. 1986). Reconnaissance of this site by ACA in March and April 1987, indicated that the site consists of two brick pillars once supporting a waterwheel/pump station. The site clearly does not possess any of the essential criteria of integrity to be considered eligible for the NRHP. The remaining recommendations are identical to those made by the original surveyors. Table 7 presents the previous and present recommendations for the NOV sites. A brief description of those sites recommended eligible for the NRHP follows.

Ostrica (16PL66) and Olga (16PL61)

Ostrica and Olga are located on the east bank of the Mississippi River. Ostrica is located approximately four miles upriver from Fort St. Philip and Olga is located approximately four miles downriver from the fort. These sites are the remains of nineteenth-twentieth century Slavic immigrant villages and are evaluated as eligible for the National Register of Historic Places under 36CFR60.4(d) as ethnographic sites.

Ostrica and Olga have the potential to provide information on the changing material culture (or lack of it) as Slavic immigrants became assimilated into American culture. The archeological record at these sites can provide valuable comparative information on the Yugoslavian diet, socio-economic level, macro- and micro-economic relationships, and intra-inter site organization patterns. The record at Ostrica can also provide information on the oyster industry because the location was the site of an oyster factory. Olga was also reported to contain a store and bath house that served the people living in the area and may be used to address additional questions on areal economy.

Adolph's Camp (16PL80)

This site is located on the east bank of the Mississippi River, immediately downriver from Adolph's Canal. It is also evaluated as eligible for the NRHP under 36CFR60.4(d) as an ethnographic site. Adolph's Camp is reported to have been occupied for over 100 years. The original occupant of the site, Alexander Smith, had immigrated from Sweden to Louisiana. He moved to Plaquemines Parish and built a house circa 1880. Smith ran a grocery and harvested oysters (Davis et al. 1981). The descendants of Smith were still living on the land in 1981.

Table 6. National Register Evaluation of Affected Cultural Resource Sites Within the NOV Area.

Site Number	Other Site Designations	Integrity of						NRHP Criteria				Evaluation/ Recommendation	
		Location	Design	Setting	Materials	Workmanship	Feeling	Association	A	B	C		D
16PL47	Salt Works Site	Yes	No	No	Unknown	No	No	No	No	No	No	No	Not Eligible
16PL48	The Jump Site	No	No	No	No	No	No	No	No	No	No	No	Not Eligible
16PL50	Unnamed Bayou	Unknown	No	No	No	No	No	No	No	No	No	No	Not Eligible
16PL51	Lucas Canal Site	Unknown	No	No	No	No	No	No	No	No	No	No	Not Eligible
16PL61	Olga Site	Yes	No	Yes	N/A	N/A	Yes	Yes	No	No	No	Yes	Eligible
16PL64	Point Pleasant Camp	Yes	No	N/A	No	No	No	No	No	No	No	No	Not Eligible
16PL65	Bohemia Canal	Unknown	N/A	Unknown	Unknown	No	No	No	No	No	No	No	Not Eligible
16PL66	Ostrica	Yes	No	Yes	N/A	N/A	Yes	Yes	No	No	No	Yes	Eligible
16PL67	Jeanfreau	No	N/A	N/A	No	N/A	No	No	No	No	No	No	Not Eligible
16PL68	Point Bolivar	No	No	No	No	No	No	No	No	No	No	No	Not Eligible
16PL69	Tabony Cemetary Site	Yes	No	No	No	No	No	No	No	No	No	No	Not Eligible
16PL70	Matulich Site	No	N/A	Unknown	Unknown	N/A	No	No	No	No	No	No	Not Eligible
16PL71	Empire Oil Field I	Yes	No	Yes	No	No	No	No	No	No	No	No	Not Eligible
16PL72	Haspel and Davis Site	Yes	N/A	Unknown	Unknown	N/A	No	No	No	No	No	No	Not Eligible
16PL73	Fuslich Site	Yes	N/A	Unknown	Unknown	N/A	No	No	No	No	No	No	Not Eligible

Table 6. (Continued).

Site Number	Other Site Designations	Integrity of						NRHP Criteria				Evaluation/ Recommendation	
		Location	Design	Setting	Materials	Workmanship	Feeling	Association	A	B	C		D
16PL74	Brancovich	Yes	N/A	Unknown	Unknown	N/A	No	No	No	No	No	No	Not Eligible
16PL75	Near Canal 1	Yes	N/A	Unknown	Unknown	N/A	No	No	No	No	No	No	Not Eligible
16PL76	Arbula	Yes	N/A	Unknown	Unknown	N/A	No	No	No	No	No	No	Not Eligible
16PL77	Barrow and Slatter	Yes	N/A	Unknown	Unknown	N/A	No	No	No	No	No	No	Not Eligible
16PL78	Harris Bayou Site	Yes	N/A	Unknown	Unknown	N/A	No	No	No	No	No	No	Not Eligible
16PL79	Meyer's Camp Site	Yes	N/A	Unknown	Unknown	N/A	No	No	No	No	No	No	Not Eligible
16PL80	Adolph's Camp Site	Yes	No	Yes	N/A	N/A	Yes	Yes	No	No	No	Yes	Eligible
16PL82	Dunn's Camp Site	Yes	No	Yes	N/A	N/A	Yes	Yes	No	No	No	Yes	Eligible
16PL95	22A	Yes	N/A	Unknown	Unknown	N/A	No	No	No	No	No	No	Not Eligible
16PL96	Tree Site	Yes	N/A	Unknown	Unknown	N/A	No	No	No	No	No	No	Not Eligible
16PL100	Quarantine Lodge	No	No	No	No	No	No	No	No	No	No	No	Not Eligible
16PL104	Sophie Plantation	Yes	No	No	No	N/A	No	No	No	No	No	No	Not Eligible
16PL106	Monsecour Plantation	Yes	No	No	No	N/A	No	No	No	No	No	No	Not Eligible
16PL131	Home Place	No	N/A	Unknown	Unknown	N/A	No	No	No	No	No	No	Not Eligible
16PL132	Old St. Patrick's Cemetery	No	No	No	No	No	No	No	No	No	No	No	Not Eligible
16PL139	Humble Oil Site	Yes	No	Yes	No	No	No	No	No	No	No	No	Not Eligible

Table 6. (Continued).

Site Number	Other Site Designations	Location	Design	Setting	Integrity of				NRHP Criteria				Evaluation/Recommendation
					Materials	Workmanship	Feeling	Association	A	B	C	D	
16PL140	Bohemia Pumping Station	Yes	No	No	No	No	No	No	No	No	No	No	Not Eligible
16PL142	Gravolet Canal Site	Yes	No	Yes	No	No	No	No	No	No	No	No	Not Eligible
Y16PLA	Hacks Bayou	Yes	N/A	Unknown	Unknown	N/A	No	No	No	No	No	No	Not Eligible
Y16PLB	Zimmerman House	No	No	Yes	No	No	No	No	No	No	No	No	Not Eligible
Y16PLC	Empire Oil Field II	Yes	No	Yes	No	No	No	No	No	No	No	No	Not Eligible
Y16PLD	Louis Zetturich	No	N/A	Unknown	Unknown	N/A	No	No	No	No	No	No	Not Eligible

Table 7. Comparison of Past and Present NRHP Recommendations
for Cultural Resource Sites Within
the NOV Direct Impact Area.

Site Number	Other Site Designations	Original Recommendations/ Current Status	Current Evaluation
16PL27	Fort De La Boulaye	National Historic Landmark Delist Gravolet Canal Locality	Not Applicable
16PL38	Fort Jackson	National Historic Landmark	Not Applicable
16PL39	Fort St. Philip	National Historic Landmark	Not Applicable
16PL47	Salt Works Site	None	Not Eligible
16PL48	The Jump Site	None	Not Eligible
16PL50	Unnamed Bayou	None	Not Eligible
16PL51	Lucas Canal Site	None	Not Eligible
16PL61	Olga Site	Not Eligible	Eligible
16PL64	Point Pleasant Camp	Not Eligible	Not Eligible
16PL65	Bohemia Canal	Not Eligible	Not Eligible
16PL66	Ostrica	Further Work	Eligible
16PL67	Jeanfreau	Not Eligible	Not Eligible
16PL68	Point Bolivar	Not Eligible	Not Eligible
16PL69	Tabony Cemetery Site	Not Eligible	Not Eligible
16PL70	Matulich Site	Not Eligible	Not Eligible
16PL71	Empire Oil Field I	Not Eligible	Not Eligible
16PL72	Haspel and Davis Site	Not Eligible	Not Eligible
16PL73	Fusich Site	Not Eligible	Not Eligible
16PL74	Brancovich	Not Eligible	Not Eligible
16PL75	Nestor Canal I	Not Eligible	Not Eligible
16PL76	Arbula	Not Eligible	Not Eligible

Table 7. (Continued).

Site Number	Other Site Designations	Original Recommendations/ Current Status	Current Evaluation
16PL77	Barrow and Slatter	Not Eligible	Not Eligible
16PL78	Harris Bayou Site	Not Eligible	Not Eligible
16PL79	Meyer's Camp Site	Not Eligible	Not Eligible
16PL80	Adolph's Camp Site	Not Eligible	Eligible
16PL82	Dunn's Camp Site	Not Eligible	Eligible
16PL95	22A	None	Not Eligible
16PL96	Tree Site	None	Not Eligible
16PL100	Quarantine Lodge	None	Not Eligible
16PL104	Sophie Plantation	Not Eligible	Not Eligible
16PL106	Monsecour Plantation	Not Eligible	Not Eligible
16PL131	Home Place	Not Eligible	Not Eligible
16PL132	Old St. Patrick's Cemetery	Not Eligible	Not Eligible
16PL139	Humble Oil Site	Not Eligible	Not Eligible
16PL140	Bohemia Pumping Station	Eligible/Not Eligible	Not Eligible
16PL142	Gravolet Canal Site	Not Eligible	Not Eligible
Y16PLA	Hacks Bayou	Not Eligible	Not Eligible
Y16PLB	Zimmerman House	Not Eligible	Not Eligible
Y16PLC	Empire Oil Field II	Not Eligible	Not Eligible
Y16PLD	Louis Zetturich	Not Eligible	Not Eligible

* Conflict between report and site record

In the 1800s, few Swedes had immigrated to South Louisiana. A study of this camp site could provide unique information on this isolated ethnic group. Because of its relative isolation and occupation by a single ethnic group, the archeological record at this site can provide valuable information on possible rates of acculturation and ensuing changes in diet, socio-economic level, macro- and micro-economic relationships, and intra-site organization patterns. A potential also exists for comparison of rates of acculturation and site patterning between this site, Olga, and Ostrica. Additionally, like Olga and Ostrica, a store was present at this site. A potential exists for further comparison and refinement of data on trade networks and interactions between these sites.

Dunn's Camp (16PL82)

Dunn's Camp is located on the east bank between Mitchell Light (river mile 13.5) and Adolph's Canal (river mile 12.8). The site is evaluated as eligible for the NRHP under 36CFR60.4 (d) as an industrial site. The site consists of a surface artifact scatter and subsurface remains of the house and shipyard of Chip Dunn, a nineteenth century shipbuilder. In 1900, Dunn abandoned the site and the local inhabitants used the house for a schoolhouse. Investigations at the Dunn's Camp may provide answers to research questions concerning light-industrial nineteenth century shipbuilding in the region. Dunn's Camp has the potential to supplement scanty historical data on the shipbuilding industry as well as answer research questions pertinent to the understanding of the organization and design processes of a nineteenth century light-industrial shipbuilders shop. The site also has the potential to address research questions relating to intra-site settlement patterning of Anglo-American settlements in the region. While an enormous historical database exist for the study of the larger plantation patterns (cf. Rehder 1971), very little information is available on smaller single-family settlements. A potential also exists for inter-site comparisons with two Yugoslav sites (Olga and Ostrica) and a Swedish site (Adolph's Camp) occupied during the same time period.

MANAGEMENT OPTIONS

Following are the management options available to complete the cultural resource compliance-related activity for the NOV Area. These options concern additional cultural resource surveys as well as site-specific options for the National Historic Landmarks and sites considered eligible for the NRHP. Here it should be noted that ACA's role is only to suggest appropriate options to NOD-COE management and to assist in facilitating the decision making process regarding these resources. Final determinations of effect and final decisions regarding appropriate actions for the completion of cultural resource compliance activity for the NOV can be made only by the NOD-COE management in consultation with the SHPO and the ACHP. Our recommendations for survey and site treatment are provided in the next chapter.

Cultural Resource Surveys

With the exception of four areas along the west bank of the East Bank Barrier Levee project, all proposed levee enlargement and construction corridors have been surveyed. These surveys meet or exceed Federal requirements for cultural resource identification efforts. No additional

surveys in these areas are necessary or warranted. The four areas which have not been surveyed are within high probability areas for potentially significant historic sites. These areas are listed as follows:

- 1) North of Fort Jackson, along the west bank segment of the East Bank Barrier Levee, from levee station 550+11.76 to 693 +15;
- 2) From levee station 736 +2.81 to 745 +73.06;
- 3) From levee station 786 +80 to 1109 +18.53; and
- 4) From levee station 1184 +26.47 to 1278.00.

Two basic options are presented for management's consideration. The first option is to confine all activities associated with levee enlargement (e.g., grading, dumping, vehicular traffic) to the existing disturbed levee ROW. If this option is followed, no additional survey will be necessary. This option would be preferable in terms of construction schedules.

If it is not possible to confine work to the existing ROW then the second option is to conduct a cultural resource survey of these areas. Following survey, an inventory report following the guidelines of Reporting Cultural Resources Investigations Standards in Appendix A of this document would be required. This option, in terms of construction scheduling is the least preferable. An additional factor to be considered is the high probability for location of cultural resources outside the existing ROW. If such resources are located then additional time would be necessary to record and evaluate the significance of the newly found cultural resources. Should it be determined that there are significant resources within impact areas then mitigation would be required before enlargement activity could proceed. Clearly, the first option makes time scheduling easier and is more cost effective.

Other existing options consist of combinations of the above. If it is necessary to extend activity outside the existing ROW in only portions of these unsurveyed areas (e.g., for equipment yards, turn-arounds, stockpiles) then survey of only those areas that extend outside the existing ROW would be necessary. Another option would be to conduct the identification effort and cultural resource evaluations and then avoid all significant cultural resources. The former option would be less time intensive, while the latter option would possibly clear more surface area for engineering alternatives.

Cultural Resources: National Landmark Sites

Fort Jackson. Fort Jackson is a National Historic Landmark. The West Bank Barrier Levee expansion project will directly impact portions of the site. Two management options are presented. The first option is to confine all activities to the existing levee ROW. This area has been previously disturbed by the land altering activities associated with the existing levee. If confined to this area, additional filling and grading activity associated with levee expansion should not affect the integrity of the site.

The second option to be followed, if these activities occur outside the existing ROW, is to conduct data recovery operations for the purpose of mitigating adverse effects to those portions of the site that may be affected by NOV construction. The alternative of moving the levee is not

considered feasible. If activity cannot be confined to the existing corridor then the research design presented in Annex A is considered to be the preferred, prudent, feasible, and adequate treatment for arriving at a finding of "No Adverse Effect" within the context of the proposed undertaking. It should be noted there is an PMOA between the NOD-COE and the SHPO concerning this National Register property. It may be that the PMOA could be expanded to include the measures discussed above.

Fort St. Philip. Fort St. Philip is a National Historic Landmark. The East Bank Barrier Levee, as currently planned, will directly and adversely affect portions of the site. Construction plans for the East Bank Barrier Levee have been cancelled at present.

Engineering plans for construction activity at the fort indicate that the present projected impacts are reduced to a minimum and there are no viable options for further reduction of these impacts. In addition, because of changes in the engineering requirements for the levee since 1973, the original option of expanding the levee only on the riverside portion of the fort is not possible. The alternative of moving the levee is not considered feasible.

If the decision is made to proceed with the East Bank Barrier Levee project, a program to mitigate the direct and indirect effects of the proposed project is management's only apparent option. Recommendations for mitigation and a data recovery plan will need to be coordinated with the property owner, the ACHP, and the SHPO. The ACHP and SHPO in consultation with the NOD-COE will decide and approve "methods to avoid, reduce, or mitigate adverse effects" (Section 106) on this site. These measures will then be incorporated into an MOA and implemented by the NOD-COE before construction activities begin. Recommendations and a data recovery plan for mitigation of adverse effects to Fort St. Philip are incorporated into this document as Annex B. It should be noted that a PMOA already exists between the NOD-COE and the SHPO concerning this National Register property. It may be that this PMOA could be expanded to include the measures discussed above.

Fort de la Boulaye. Fort de la Boulaye is a National Historic Landmark. The purported location of the fort is adjacent to the proposed impact area of Reach C of the NOV. On the basis of the summary and recommendations presented by Jeter and Goodwin (1986), it would appear that while the actual remains of the fort could not be located, little possibility exists of an impact to the site by the proposed levee expansion project along the Joe Gravolet Canal. However, it was recommended that levee enlargement activity be monitored in this area.

It is our recommendation also that the levee construction in this area be monitored by a professional archeologist. Because of the lack of locational data on the fort, a justifiable option, of course exists, to not conduct monitoring. However monitoring would serve to establish beyond a reasonable doubt whether remains associated with the fort are within the impact zone. Should remains of the fort be located within the area, the monitor will be able to establish an "avoidance area" around the location and construction could proceed in areas not associated with the

fort. This process, while slowing the levee enlargement, would be preferable to halting construction should remains be located without professional monitoring.

A professional report will need to be prepared after levee enlargement and monitoring has been completed. If no remains associated with the fort are located during monitoring, then this report should recommend to NPS that the Gravolet Canal Locality be delisted as a National Historic Landmark.

Cultural Resources: NRHP Eligible Sites

Four sites have been recommended as eligible for the NRHP. These are, Olga (16PL61), Ostrica (16PL66), Adolph's Camp (16PL80), and Dunn's Camp Site (16PL82). Portions of each of these sites will be directly impacted by construction of the East Bank Barrier Levee. Construction plans for the East Bank Barrier Levee have been cancelled at present.

Avoidance of these sites is not feasible. The sites are located adjacent to the river, along and within the natural river levee. On the basis of the engineering data there are no means to lessen the direct effects of the proposed levee expansion in these site areas without moving the levee behind the sites (away from the river). Moving the levee behind the sites would create an indirect adverse effect by opening the sites to degradation from flood waters and storm and hurricane induced surges from the south and west.

The most expedient option for management is to conduct partial data recovery on those portions of the sites to be directly impacted by the levee project as currently planned. If the decision is made to proceed with construction of the East Bank Barrier Levee, recommendations for mitigation and a data recovery plan will need to be coordinated with the SHPO. Upon approval by the SHPO the recommended data recovery measures will then be implemented by the NOD-COE prior to construction activity at these locations. Recommendations and a data recovery plan for mitigation of adverse effects to these sites are incorporated into this document as Annex D.

IX. MANAGEMENT RECOMMENDATIONS

Presented in this chapter are ACA's recommendations to complete cultural resource compliance-related activity within the NOV Area. Here, as in the discussion of management options, it should be noted that ACA's role is only to make appropriate recommendations to NOD-COE management and to assist in facilitating the decision making process regarding this project. Final determinations of effect and final decisions regarding appropriate treatment of these resources can be made only by the NOD-COE management in consultation with the SHPO and ACHP.

CULTURAL RESOURCE SURVEYS

All proposed construction corridors with the exception of four areas north of Fort Jackson have been surveyed. For those areas where cultural resource surveys have been completed, no additional identification efforts are recommended. For the nonsurveyed areas, there are two recommendations. The first is to confine all enlargement activity within the existing levee ROW. If this is acceptable then no additional identification work in these areas is necessary. If levee enlargement activity in these areas cannot be confined to the existing ROW, then a 100% pedestrian survey of impact areas outside the existing ROW and an inventory report is recommended. These areas are:

- 1) North of Fort Jackson, on the West Bank Barrier Levee, from levee station 550+11.76 to 693+15;
- 2) From levee station 736+2.81 to 745+73.06;
- 3) From levee station 786+80 to 1109+18.53; and
- 4) From levee station 1184+26.47 to 1278.00.

CULTURAL RESOURCE SITES

National Landmark Sites

Fort de la Boulaye (16PL27), Fort St. Philip (16PL39), and Fort Jackson (16PL38) are National Historic Landmarks and as such are listed in the NRHP (36CFR65.2[b]). Section 106 and 110f of the National Historic Preservation Act and 36CFR65, require that consultation, recommendations, and a data recovery plan be approved by the ACHP and the SHPO.

To complete work at these locations, data recovery plans incorporating appropriate measures for mitigation of adverse impacts to the properties are recommended. The data recovery plans will need to be agreed upon by the NOD-COE, the property owners, the Louisiana SHPO, and the ACHP. These measures should then be incorporated into a Memoranda of Agreement and implemented by the NOD-COE. Data recovery plans and recommendations for the mitigation of proposed adverse impacts to these sites are provided individually as Annexes A, B, and C of this report. Construction activity should not be allowed to proceed at these locations until these measures are completed and approved by all involved parties.

National Register Eligible Properties

Four cultural resource sites have been recommended as eligible for the NRHP. These are Olga (16PL61), Ostrica (16PL66), Adolph's Camp (16PL80),

and Dunn's Camp (16PL82). If the levee is constructed at these locations, then avoidance of these cultural resource sites is also not a feasible option. Should the Louisiana SHPO concur with these recommendations, a data recovery plan approved by the SHPO's office and the ACHP for Phase I mitigation of these sites is recommended. The present landowner(s) of these properties must also be contacted and their approval of the data recovery plans must be obtained. Data recovery plans for Phase I mitigation at these sites are provided in Annex D of this report. Construction activity should not be allowed to proceed at these locations until all mitigation measures are completed and approved by all involved parties.

REFERENCES CITED¹

Adams, William H.

1976 Trade Networks and Interaction Spheres--A view from Silcott. Historical Archaeology 10:99-112.

1980 Waverly Plantation: Ethnoarchaeology of a Tenant Farming Community. Report submitted to Heritage Conservation and Recreation Service under contract #C-55026 (79). Resource Analysts, Inc. Bloomington, Indiana.

Altschul, Jeffrey H.

1978 Cultural Resources Impact Assessment, Houma-Terrebonne Regional Sewerage Plan. Report of Investigations No. 10. New World Research, New Orleans. Submitted to the U.S. Environmental Protection Agency, Region VI: Dallas.

American Geological Institute.

1972 Dictionary of Geological Terms, Auchon Press, New York.

American National Red Cross

1929 The Mississippi Valley Flood Disaster of 1927: Official Report of the Relief Operations. The American National Red Cross, Washington, D.C.

Armstrong, Gladys Stovall

1984 Orange Growers on the East Bank in Plaquemines Parish, 1888. Deep Delta Quarterly 2:219, 356.

n.d. Plaquemines Parish, Louisiana: 1810 Census. Ms. on file, Plaquemines Parish Library, Buras, LA.

Barber, Michael

1976 The Vertebrate Fauna From a Late Eighteenth Century Well: The Bray Plantation, Kingsmill, Virginia. Historical Archaeology 10(1):68-72.

Baudier, Roger

1944 One Hundred Years: St. Thomas Parish. Ms. on file, St. Thomas Church, Pointe a la Hache, LA.

Bearss, Edwin C.

1961 Seizure of the Forts and Public Property in Louisiana. Reprinted from Louisiana History 2(3), July 1943.

Binford, L.R.

1964 A Consideration of Archaeological Research Design. American Antiquity 29:425-441.

¹ This section contains references cited for the main volume as well as for the appendices and annexes.

- Bouchereau, Louis, and Alcee Bouchereau
1864-1904 Statement of the Sugar and Rice Crop Made in Louisiana.
Pelican Steambook and Job, New Orleans.
- Brasseux, Carl A.
1985 Acadian Life in the Lafourche Country, 1766-1803. In The Lafourche Country: The People and the Land, edited by Philip Uzee, pp. 33-42.
Center for Louisiana Studies, University of Southwestern Louisiana, Lafayette.
- Bridges, William M.
1882 Report of Lt. William M. Bridges. In Official Records War of the Rebellion Union and Confederate Armies. Series I, Vol. VI. U.S. Government Printing Office, Washington.
- Briggs, Alton
1974 The Archaeology of 1882 Labor Camps on the Southern Pacific Railroad, Val Verde County, Texas. Unpublished Masters Thesis, Department of Anthropology, University of Texas at Austin.
- Brown, J.
1976 The Southern Cult Reconsidered. Mid Continental Journal of Archaeology.
- Carter, Hodding
1942 Lower Mississippi. Ferrar and Rinehart, New York.
- Casey, Powell
1983 Encyclopedia of Forts, Posts, Named Camps, and Other Military Installations in Louisiana 1700-1981. Claitors, Baton Rouge.
- Castille, George
1978 Cultural Resources Survey of a Protection Levee Around Fort Jackson, Plaquemines Parish, Louisiana. Louisiana Department of Culture, Recreation, and Tourism: Office of Program Development: Division of Archaeology and Historic Preservation. Submitted to Plaquemines Parish Commission Council, Plaquemines Parish, LA.
- Castille, George, Douglas Bryant, Joan M. Exnicios, William Reeves, and Susan De France.
1985 Urban Archaeology in Old New Orleans: Historical and Archaeological Investigation within the Greater New Orleans Bridge Right-of-Way. Prepared for Mann, Johnsen, Mendenhall, and Curtis and Davis, and the Louisiana Department of Transportation and Development.
- Chabreck, R. H., and Linscombe, G.
1978 Vegetative Type Map of the Louisiana Coastal Marshes. Louisiana Department of Wildlife and Fisheries, New Orleans, Louisiana.
- Charlevoix, Pierre Fiv de
1977 Charlevoix's Louisiana-Selections from the History and the Journal. Louisiana American Revolution Bicentennial Commission, Louisiana State University Press, Baton Rouge. Originally published 1744.

Chase, James E.

- 1985 Scope of Services: Greater Plaquemines Parish, Louisiana Research Design and Final Report for the New Orleans to Venice Hurricane Protection Project. In-House document, Planning Division, U.S. Army Corps of Engineers, New Orleans District.

Childs, Marquis W.

- 1982 Mighty Mississippi. Ticknon and Fields, New Haven and New York.

Coastal Environments, Inc.

- 1977 Cultural Resources Evaluation of the Northern Gulf of Mexico Continental Shelf. Coastal Environments, Baton Rouge. Submitted to National Park Service: Office of Archaeology and Historic Preservation: Interagency Archaeological Services, Washington, D.C.

- 1983 Archaeological Evaluation of the Reported Location of Fort de la Boulaye. Research Report submitted to the Division of Archaeology and the Plaquemines Parish Commission.

Coleman, J. M.

- 1982 Deltas: processes of deposition and models for exploration. International Human Resources Development Corp., Boston.

Collins, Henry B., Jr.

- 1927 Archaeological Work in Louisiana and Mississippi. In Explorations and Fieldwork of the Smithsonian Institution in 1926, pp. 200-207. Miscellaneous Collections 78, Washington, D.C.

Dansie, Amy

- 1979 Beef, Bobcat and Other Beast Bones: Faunal Remains from Lovelock's Chinatown. In Archaeological and Historical Studies at Ninth and Amherst, Lovelock, Nevada, edited by Eugene M. Hattori, Mary K. Rusco, and Donald R. Tuohy, pp.348-410. Nevada State Museum Archaeological Services Report, Carson City.

Davis, Dave D. (editor)

- 1984 Perspectives on Gulf Coast Prehistory. University of Florida Press. Florida State Museum. Gainesville.

Davis, Dave D., Marco J. Giardino, and John D. Hartley

- 1978 Cultural Resources Survey, New Orleans to Venice Hurricane Protection Levee, Reach A, Plaquemines Parish, Louisiana. Department of Anthropology, Tulane University, New Orleans. Submitted to the U.S. Army Corps of Engineers: New Orleans District, New Orleans. Contract No. DACW29-78-M-1873.

Davis, Dave D., John D. Hartley, and Ruth Weins Henderson

- 1981 An Archaeological and Historic Survey of the Lowermost Mississippi River: Cultural Resources Survey, New Orleans to Venice Hurricane Protection Levee: East Bank Barrier Levee Plan, Plaquemines Parish, Louisiana. Department of Anthropology, Tulane University, New Orleans. Submitted to the U.S. Army Corps of Engineers: New Orleans District, New Orleans. Contract No. DACW29-79-C-0090.

- Davis, Edwin Adams
 1961 Louisiana: A Narrative History. Claitors, Baton Rouge.
- 1963 The Resources of a Great State. Panoramic Teaching Aids, Alexandria, LA.
- Deagan, Kathleen
 1982 Avenues of Inquiry in Historical Archaeology. In Advances in Archaeological Method and Theory, vol. 5, edited by Michael B. Schiffer, pp. 151-177. Academic Press, New York.
- Deetz, James
 1965 The Dynamics of Stylistic Change in Arikara Ceramics. Illinois Studies in Anthropology 4. University of Illinois Press, Urbana.
- Duhe, Brian J.
 1976 Preliminary Evidence of Seasonal Fishing Activity at Bayou Jasmine. Louisiana Archaeology 3:33-74.
- Duncan, Johnson K.
 1882 Report of General Johnson K. Duncan. In Official Records War of the Rebellion Union and Confederate Armies. Series I, Vol. VI. U.S. Government Printing Office, Washington.
- Eidt, Robert C.
 1973 A Rapid Chemical Field Test for Archaeological Site Surveying. American Antiquity 27 (11):206-210.
- Emerson, Tom
 1980 Field book for the East Bank Barrier Levee Archaeological Survey. Conducted by Tulane University under the direction of Dave Davis.
- Engineer Agency For Resources Inventories (EARI)
 1975 Inventory of Basic Environmental Data. Engineer Agency For Resource Inventories, U.S. Army Engineers Laboratories Washington, D.C.
- Evans, William S.
 1980 Food and Fantasy: Material Culture the Chinese in California and the West, ca. 1850-1900. In Archaeological Perspectives on Ethnicity in America: Afro-American and Asian American Culture History, pp. 89-96. Baywood Publishing Company, Farmingdale.
- Exnicios, Joan M. and Charles Pearson
 1985 Nineteenth Century New Orleans: Variability and Pattern in the Archaeological Record. A paper presented at the 18th Annual Meeting of the Society for Historical Archaeology, Boston, Massachusetts.
- Favrot, Henry L.
 1898 History of the New Basin Canal and Shell Road. In Reports of the Board of Control and Superintendent, pp. 45-61. T.H. Thomason, New Orleans.

Favrot, Mortimer

1943 Colonial Forts of Louisiana. Louisiana Historical Quarterly 26(3).

Federal Register

1983 Archeology and Historic Preservation; Secretary of the Interior's Standards and Guidelines. Federal Register 48(190):44716-44742

Fiehrer, Thomas Marc

1979 The African Presence in Colonial Louisiana: An Essay on the Continuing of Carrideau Culture. In Louisiana's Black Heritage, edited by Robert MacDonald, John Kemp, and Edward Haas. Louisiana State Museum, New Orleans.

Floyd, Robert J.

1977 Survey to Protect the Cultural Resources in the Gulf of Mexico. Submitted to the Gulf of Mexico Continental Shelf Office, Shell Oil.

Frazier, D. E.

1967 Recent Deltaic Deposits of the Mississippi River: Their Development and Chronology. Transactions of the Gulf Coast Association of Geological Societies 17:287-315.

Gagliano, Sherwood M.

1963 A Survey of Preceramic Occupations in Portions of South Louisiana and South Mississippi. Florida Anthropologist 16(4):105-132.

Gagliano, Sherwood M., Kathleen G. McCloskey, Johannes L. Van Beek, Richard A. Weinstein, Diane E. Wiseman, and Karen M. Wicker

n.d. A Cultural Resources Survey of the Empire to the Gulf of Mexico Waterway, Plaquemines Parish, Louisiana. Coastal Environments, Baton Rouge. Draft report submitted to the U.S. Army Corps of Engineers: New Orleans District, New Orleans. Contract No. DACW29-77-D-0272.

Gagliano, Sherwood M., Richard A. Weinstein, and Eileen K. Burden

1978 Preliminary Study of the Cultural Resources of the St. Bernard Parish Wetlands, Louisiana. Coastal Environments, Incorporated, Baton Rouge. Submitted to the the U.S. Army Corps of Engineers: New Orleans District.

Gagliano, Sherwood M., Katherine L. Brooks, and Ben A. Small

1978 Cultural Resource Survey of Grand and Tiger Passes and Baptiste Collette Bayou, Plaquemines Parish, Louisiana. Coastal Environments, Incorporated, Baton Rouge. Submitted to the U.S. Army Corps of Engineers: New Orleans District. Contract No. DACW29-77-D-0272.

Garrison, Ervan G., and James G. Baker

1982 A Technical Report on a Methodological Evaluation of Underwater Instrumental Search in the Lower Mississippi River, Venice, Louisiana to the Gulf of Mexico. Environmental Engineering Division, Texas Engineering Experiment Station and Texas A&M Research Foundation. Submitted to the U.S. Army Corps of Engineers: New Orleans District. Contract No. DACW29-82-D-0032.

Garson, Adam G., Cecil R. Brooks, Nancy N. Brown, Douglas N. Edsall, Edwin A. Lyon, Sally Kittredge Evans Reeves, Manfred Schuetz, Louis Vaillancourt, Jill-Karen Yakubik, and Paula A. Zitzler

- 1982 Cultural Resources Survey of Fourteen Mississippi River Levee and Revetment Items. Iroquois Research Institute, Fairfax, VA. Submitted to the U.S. Army Corps of Engineers: New Orleans District. Contract No. DACW29-80-D-0107.

Gibbon, Guy

- 1984 Anthropological Archaeology. Columbia University Press, New York.

Gibson, Jon L.

- 1974 The Rise and Decline of Poverty Point. Louisiana Archaeology 1:8-36.

- 1978 Archaeological Survey of the Lower Atchafalaya Region, South Central Louisiana. Center for Archaeological Studies Report No. 5. University of Southwestern Louisiana, Lafayette.

- 1980 Speculations on the Origin and Development of Poverty Point Culture. Louisiana Archaeology 6:319-348.

- 1982 The Troyville-Baytown Issue. In Louisiana Archaeology 31-64.

Ginn, Mildred-Kelly

- 1940 A History of Rice Production in Louisiana to 1896. Louisiana Historical Quarterly 23:544-587.

Giraud, Marcel

- 1974 A History of French Louisiana Volume I: The Reign of Louis XIV, 1689-1715. Louisiana State University Press, Baton Rouge.

Goodwin, R. Christopher, Peter A. Gendel, and Jill-Karen Yakubik

- 1983 Archeological Survey of the New House Site Harlem Plantation, Plaquemines Parish, Louisiana. R. Christopher Goodwin and Associates, New Orleans. Submitted to the U.S. Army Corps of Engineers: New Orleans District. Contract No. DACW29-83-M-0977.

Goodwin, R. Christopher, Jill-Karen Yakubik, Debra M. Stayner, and Kenneth R. Jones

- 1984 Cultural Resources Survey of Five Mississippi River Revetment Items. R. Christopher Goodwin and Associates, New Orleans. Submitted to the U.S. Army Corps of Engineers: New Orleans District. Contract No. DACW29-84-D-0029.

Goodwin, R. Christopher, Marvin D. Jeter, Mark A. Catlin, Jeffrey E. Treffinger, Paul C. Armstrong, Jill-Karen Yakubik, Roderick M. Lincoln, Mary K. Knill, Herschel A. Franks, and Carol M. Poplin

- 1986 Cultural Resources Survey of the New Orleans to Venice Hurricane Protection Project, Reach C Enlargement, Plaquemines Parish, Louisiana. R. Christopher Goodwin and Associates, New Orleans. Submitted to the U.S. Army Corps of Engineers: New Orleans District. Contract No. DACW29-85-D-0113.

- Goodyear, Albert C., L. Mark Raab, and Timothy Klinger
1978 The Status of Archaeological Research Design in Cultural Resource Management. American Antiquity 43:159-173.
- Greene, Jerome A.
1982 Special History Study: The Defence of New Orleans, 1718-1900. Jean Lafitte National Historical Park, National Park Service. Denver Service Center, Denver.
- Greene, Jerome A., A. Berle Clemenson, John C. Paige, David R. Stuart, and Lawrence F. Van Horn
1984 Mississippi River Cultural Resources Survey: A Comprehensive Study. National Park Service: Southeast/Southwest Team, Denver. Submitted to the U.S. Army Corps of Engineers: New Orleans District.
- Gremillion, J.B.
n.d. Plaquemines Parish. Ms. on file, Plaquemines Parish Library, Buras, LA.
- Griffin, James B.
1967 Eastern North American Archaeology; A Summary. Science 156:175-191.
- Griffin, John W.
1974 Investigations in Russell Cave. Publications in Archeology 13. National Park Service, U.S. Department of the Interior, Washington, D.C.
- Gulf South Research Institute
1972 American Indians of Louisiana: An Assessment of Needs. Gulf South Research Institute, Baton Rouge. Submitted to the Governors Commission for Indian Affairs, Lake Charles, LA.
- Gust, Sherri M.
1982 Mammalian Remains. In Archaeological and Historical Studies of the IJ56 Block, Sacramento, California: An Early Chinese Settlement, edited by Mary Praetzellis and Adrian Praetzellis, pp. 87-112. Cultural Resources Facility, Sonoma State University.
- 1983 Problems and Prospects in Nineteenth Century California Zooarchaeology. In Forgotten Places and Things: Archaeological Perspectives on American History, edited by Albert E. Ward, pp. 341-348. Contributions to Anthropological Studies No. 3. Center for Anthropological Studies, Albuquerque.
- 1984 Mammalian Fauna from the Woodland Opera House. In The Chinese Laundry on Second Street: Papers on Archeology at the Woodland Opera House Site, pp.181-192. California Archeological Reports No. 24.
- Haag, W.G.
1965 Louisiana in North American Prehistory. Louisiana Studies 4:279-323.

Hansen, Harry (editor)

- 1971 Louisiana: A Guide to the State. Revised edition. Hastings House, New York.

Hyde, Samuel C.

- 1987 Cultural Assimilation in Confederate New Orleans. Unpublished Master's Thesis, Department of History, University of New Orleans.

Iroquois Research Institute

- 1980 Cultural Resources Survey of Three Mississippi River Levee and Revetment Items, Plaquemines Parish, Louisiana. Iroquois Research Institute, Fairfax, VA. Submitted to the U.S. Army Corps of Engineers: New Orleans District. Contract No. DACW29-80-D-0107.

- 1982 Cultural Resources Survey of the Three Mississippi River Levee And Revetment Items, Plaquemines Parish, Louisiana. Iroquois Research Institute, Fairfax, VA. Submitted to the U.S. Army Corps of Engineers: New Orleans District. Contract No. DACW29-80-D-0107.

Jackson, John R.

- 1935 The Poor Whites of Ante-Bellum Louisiana. Unpublished Master's thesis, Department of Social Sciences, Tulane University, New Orleans.

Jennings, Calvin

- n.d. Underwater Cultural Resource Management Plan for the U.S. Army Corps of Engineers, New Orleans District (preliminary title). Report in preparation for the U.S. Army Corps of Engineers, New Orleans District.

Jeter, Marvin D., and R. Christopher Goodwin

- 1986 Archeological Research to Locate and Identify the French "Fort on the Mississippi" 16PL27 (1700-1707), Plaquemines Parish, Louisiana. R Christopher Goodwin and Associates, New Orleans. Submitted to the U.S. Army Corps of Engineers: New Orleans District. Contract No. DACW29-85-0113.

Kane, Harnett T.

- 1944 Deep Delta Country. Duell, Sloan and Pierce, New York.

Kniffen, Fred B.

- 1936 Preliminary Report on the Indian Mounds and Middens of Plaquemines and Saint Bernard Parishes; in Reports on the Geology of Plaquemines and Saint Bernard Parishes. Louisiana Geological Survey Bulletin No. 8:407-422.

- 1968 Louisiana, Its Land and People. Louisiana State University Press, Baton Rouge.

Knipmeyer, William Bernard

- 1956 Settlement Succession in Eastern French Louisiana. Unpublished Ph.D. dissertation, Louisiana State University, Baton Rouge.

Kolb, C. R., and J. R. van Lopik

1958 Geology of the Mississippi River Deltaic Plain, Southeastern Louisiana. U. S. Army Waterways Experiment Station, Technical Reports 3-483 and 3-484. 2 Volumes.

La-Harpe, Jean Baptiste Bernard de

1971 Journal Historique de L'establissement des Francais a le Louisiane, Nouvelle Orleans. Reprint. Translated by V. Koenig and F. Cain. University of Southwestern Louisiana, Lafayette. Originally published 1831.

Landreth, Keith, Keo Boreson, and Mary Condon

1985 Archaeological Investigations at the Cabinet Landing Site (10BR413) Bonner County, Idaho. Eastern Washington University Reports in Archaeology and History 100-45. Archaeological and Historical Services, Eastern Washington University, Cheney.

Landry, E.A.

1938 The History of Forts Jackson and St. Philip with Special Emphasis on the Civil War Period. Unpublished Master's Thesis, Louisiana State University, Baton Rouge.

Langewalter, Paul E.

1980 The Archaeology of 19th Century Chinese Subsistence at the Lower China Store, Madera County, California. In Archaeological Perspectives on Ethnicity in America, edited by Robert Schuyler, pp. 102-112. Baywood Publishing Company, Farmingdale.

Le Gardeur, Rene J., Jr.

1980 The Origins of the Sugar Industry in Louisiana. In Green Fields: Two Hundred Years of Louisiana Sugar, pp. 1-28. Center for Louisiana Studies, University of Southwestern Louisiana, Lafayette.

Lincoln, Roderick M.

1984 The Balize 1723-1888. Deep Delta Quarterly 2:38-44, 124-126.

1986 Plaquemines Parish Chronology. Ms. in possession of author, Gretna, LA.

Louisiana County Agents Association

n.d. Louisiana: A Lucrative Land. Louisiana County Agents Association.

Louisiana Legislative Council

1964 The History and the Government of Louisiana. Research Study No. 17, Baton Rouge.

Lovrich, Frank M.

1967 The Dalmatian Yugoslavs in Louisiana. Louisiana History 8:149-164.

Lyman, R. Lee

1977 Analysis of Historic Faunal Remains. Historical Archaeology 11:67-73.

Maduell, Charles C., Jr.

1972 The Census Tables for the French Colony of Louisiana from 1699 to 1732. Genealogical Publishing, Baltimore.

Martin, F. Lester

1975 Folk Architecture of North Louisiana. Louisiana Technical School of Architecture, Ruston, LA.

McEachern, W.

1947 Origin of Citrus on Plaquemines Parish. In Plaquemines Parish Fair and Orange Festival, pp. 29, 81, 91. Sendker Print, Belle Chasse, LA.

McIntire, William G.

1958 Prehistoric Indian Settlement of the Changing Mississippi Delta. Coastal Studies Series 1. Louisiana State University, Baton Rouge.

McIntire, William, Donald Davis, William Conner, and Randall Detro

1981 A Cultural Resource Survey of the Larose to Golden Meadow Hurricane Protection Levee Sections "F" First Lift and "A" East First Lift. Submitted to the U.S. Army Corps of Engineers: New Orleans District. Contract Nos. DACW29-81-M-0637 and DACW29-81-M-0638.

Meyer, J. Ben

1975 Railroads of the Delta. Ms. on file, Louisiana Collections, Plaquemines Parish Library, Belle Chasse, LA.

Miller, George L.

1980 Classification and Economic Scaling of 19th Century Ceramics. Historical Archaeology 14:1-40.

Moir, Randall

1982 Sheet Refuse: An Indicator of Past Lifeways. In Settlement of the Prairie Margin: Archaeology of the Richland Creek Reservoir, Navarro and Freestone Counties, Texas 1980-1981, edited by L. Mark Raab. Archaeological Research Program, Southern Methodist University, Archaeological Monographs No. 1

Montgomery John L., G. Keith Landreth, and Kathleen M. Bowman (editors)

1988 Southeast Louisiana Cultural Resource Management Plan. Agency for Conservation Archaeology, Eastern New Mexico University, Portales. Draft report submitted to the U.S. Army Corps of Engineers: New Orleans District. Contract No. DACW29-86-D-0094

Moore, Clarence B.

1913 Some Aboriginal Sites in Louisiana and Arkansas. Academy of Natural Sciences of Philadelphia Journal 16(1):7-99.

Morgan, David J.

1977 The Mississippi River Delta: Legal-Geomorphologic Evaluation of Historic Shoreline Changes. Geoscience and Man 16. School of Geoscience, Louisiana State University, Baton Rouge.

Mudan, Karen

- 1978 The Effects of Socio-Cultural Variables on Food Preferences in Early 19th Century Detroit. Conference on Historic Site Archaeology Papers 12:323-391.

Muller, John W.

- 1983 An Electronic Survey of the Point-a-la-Hache Saltwater Weir: A Prototype Feature within the Mississippi River Ship Channel-Gulf to Baton Rouge Deep Draft Project. U.S. Army Corps of Engineers: New Orleans District, New Orleans.

- 1985 Deep Draft Report: A Survey of the Underwater Portions of the Baton Rouge to the Gulf Deep Draft Access Project. Venice to the Gulf Segment, Including Supplement II to the Mississippi River, Baton Rouge to the Gulf EIS. U.S. Army Corps of Engineers: New Orleans District.

Muller John W., and R. A. Flayharty

- 1982 Cultural Resources Survey of Reaches B-1, B-2, and C. Draft outline and field notes on file at U.S. Army Corps of Engineers: New Orleans District

National Park Service

- 1982 How to Apply the National Register Criteria for Evaluation. National Park Service, Washington D.C.

Neuman, Robert W.

- 1973 Archaeological Survey of the Proposed Deep Draft Access Project, Louisiana. Submitted to the U.S. Army Corps of Engineers: New Orleans District.

- 1975 Archaeological Survey of the Mississippi River Outlets, Venice Vicinity, Louisiana. Submitted to the U.S. Army Corps of Engineers: New Orleans District.

- 1977 An Archaeological Assessment of Coastal Louisiana. Melanges 11. Louisiana State University, Museum of Geoscience, Baton Rouge.

- 1982 Louisiana Prehistory. Department of Culture, Recreation, and Tourism. Louisiana Archaeological Survey and Antiquities Commission. Anthropological Study No. 6. Baton Rouge.

- 1984 An Introduction to Louisiana Archaeology. Louisiana State University Press, Baton Rouge, Louisiana.

Nordhoff, Charles

- 1876 The Cotton States in the Spring and Summer of 1875. D. Appleton, New York.

Otto, John S.

- 1975 Status Differences and the Archaeological Record - A Comparison of Planter, Overseer, and Slave Sites from Cannon's Point Plantation. Unpublished Ph.D. dissertation, University of Florida, Gainesville.

Otto, John S.

1977 Artifacts and Status Differences - A Comparison of Ceramics from Planter, Overseer, and Slave Sites on an Antebellum Plantation. In Research Strategies in Historical Archaeology, edited by Stanley South, pp. 91-118. Academic Press, New York.

1980 Race and Class on Antebellum Plantations. In Archaeological Perspectives on Ethnicity in America, Afro-American and Asian-American Culture History, edited by R.L. Schuyler, pp. 3-13. Baywood Monographs in Archaeology, No. 1. Baywood Publishing Company, Farmingdale.

Pargellis, Stanley (editor)

1969 Military Affairs in North America, 1748-1765. Shoestring (Archon) Books, Hamden, Connecticut.

Pearson, Charles E., George A. Castille, Donald Davis, Thobas E Redard, and Allen R. Saltus

1987 A History of Waterborne Commerce and Transportation within United States Army Corps of Engineers, New Orleans District and an Inventory of Known Underwater Cultural Resources. Draft report submitted to the U.S. Army Corps of Engineers, New Orleans District. Contract No. DACW2986D0092.

Phillips, Philip, J. A. Ford, and J. B. Griffin.

1951 Archaeological Survey in the Lower Mississippi Alluvial Valley 1940-1947. Papers of the Peabody Museum of Archaeology and Ethnology 25. Harvard University; Cambridge.

Phillips, Philip

1970 Archaeological Survey of the Lower Yazoo Basin, Mississippi 1949-1955. Papers of the Peabody Museum of Archaeology and Ethnology 60. Harvard University; Cambridge.

Plaquemines Protector

1888 Untitled Article. Plaquemines Protector. January 8. Pointe a la Hache, LA.

Poplin, Eric C., Kenneth G. Kelly, Donald L. Bascle, and R. Christopher Goodwin

1987 Cultural Resources Survey of the Western Sections of the Larose to Golden Meadow Hurricane Protection Project, Lafourche Parish, Louisiana. R. Christopher Goodwin and Associates, New Orleans. Submitted to the U.S. Army Corps of Engineers: New Orleans District. Contract No. DACW29-84-D-0029.

Pratt, Fletcher

1956 The Civil War on Western Waters. Henry Holt and Company, New York.

Quimby, George I., Jr.

1951 The Medora Site, West Baton Rouge, Louisiana. Field Museum of Natural History, Anthropological Series 24(2):81-135. Chicago.

Rader, Bert F.

1978a Cultural Resource Survey of the East Pointe-a-la-Hache Ferry Landing Levee Enlargement Area, Plaquemines Parish, Louisiana. U.S. Army Corps of Engineers: New Orleans District, New Orleans. Submitted to the U.S. Army Corps of Engineers: New Orleans District.

1978b Cultural Resource Survey of Grand Prairie Levee District Levee Enlargement and Slope Protection, Mississippi River, Plaquemines Parish, Louisiana. U.S. Army Corps of Engineers: New Orleans District. Submitted to the U.S. Army Corps of Engineers: New Orleans District.

Rehder, John B.

1971 Sugar Plantation Settlements of Southern Louisiana: A Cultural Geography. Unpublished Ph.D. dissertation, Department of Geography and Anthropology, Louisiana State University, New Orleans.

Ries, Maurice

1936 The Mississippi Fort Called Fort de la Boulaye. Louisiana Historical Quarterly 19(4).

Robichaux, Albert

1973 Louisiana Census and Militia Lists Volume I: 1770-1789. Harvey, LA.

Robinson, Willard B.

1977 Maritime Frontier Engineering: The Defense of New Orleans. Louisiana History 18(1).

Ruffner, James A.

1978 Climates of the States with Current Tables of Normals 1941-1970, Means and Extremes to 1975; Volume I Alabama-Montana. Gale Research Company. Book Tower, Detroit, Michigan.

Saltus, Allen R., Jr.

1984 Survey of Selected Civil War Naval Engagement Sites in Area of Fort St. Philip and Fort Jackson, Plaquemines Parish, Louisiana. Archeological Research and Survey.

Saltus, Allen R., Jr., Kay G. Hudson, and Leslie Clendenon

1975 Archaeological and Historical Overview, Archaeological Survey. In Environmental Assessment of Proposed Pipeline Construction in Terrebonne, Lafourche, Jefferson and Plaquemines Parishes, Louisiana. Gulf South Research Institute, Baton Rouge. Submitted to Louisiana Intrastate Gas Corporation. Alexandria, LA. and Louisiana State Gas Corporation, New Orleans.

Schoenberger, Barney, and Luke Petrovich

1983 The Orange Industry of Plaquemines Parish. Deep Delta Quarterly 1:355-357.

Schuyler, Robert L.

- 1977 The Spoken Word, the Written Word, Observed Behavior and Preserved Behavior: The Contexts Available to the Archeologist. Conference on Historic Sites Archeological Papers 10(2):99-120.

Schuyler, Robert L. (editor)

- 1980 Archaeological Perspectives on Ethnicity in America, Afro-American, and Asian-American Culture History. Baywood Monographs in Archaeology, No. 1, Baywood Publishing Co., Farmingdale.

Severin, Timothy.

- 1968 Explorers of the Mississippi. Alfred A. Knopf, New York.

Shenkel, J. Richard

- 1974 Big Oak and Little Oak Islands: Excavations and Interpretations. Louisiana Archaeology 1:37-65.

- 1976a Cultural Resources Survey, Empire Lock Forebay and Levee Setback, Plaquemines Parish, Louisiana. Submitted to the U.S. Army Corps of Engineers: New Orleans District.

- 1976b Cultural Resource Survey of Gravolet, Plaquemines Parish, Louisiana. Submitted to the U.S. Army Corps of Engineers: New Orleans District.

- 1976c Cultural Resources Survey of Gravolet, Plaquemines Parish, Louisiana. Submitted to the U.S. Army Corps of Engineers: New Orleans District.

- 1976d Cultural Resource Survey: Myrtle Grove Bank Protection, Plaquemines Parish, Louisiana. Submitted to the U.S. Army Corps of Engineers: New Orleans District.

Shenkel, J. Richard

- 1977a Cultural Resources Survey of the Homeplace Levee Enlargement and Slope Pavement (Phase II) Mississippi River Levees, Buras Levee District Item M-37.7-R, Plaquemines Parish, Louisiana. Submitted to the U.S. Army Corps of Engineers: New Orleans District. Contract No. DACW29-76-C-0150.

- 1977b Cultural Resources Survey of the Mississippi River Levees, Grand Prairie Levee District Levee Enlargement and Slope Protection (Phase II) Item M-66 to 59-L, Plaquemines Parish, Louisiana. Submitted to the U.S. Army Corps Engineers: New Orleans District. Contract No. DACW29-76-C-0150.

- 1977c Cultural Resources Survey of the Point Michel Revetment, Item MI.-46.0 to 42.0 R, Plaquemines Parish, Louisiana. Submitted to the U.S. Army Corps of Engineers: New Orleans District. Contract No. DACW29-76-C-0150.

Shenkel, J. Richard

1977d Cultural Resources Survey of the Port Sulphur Levee Enlargement and Setback: Mississippi River Levees, Buras Levee District, Item M-41.7R, Plaquemines Parish, Louisiana. Submitted to the U.S. Army Corps of Engineers: New Orleans District. Contract No. DACW29-76-C-0150.

Sitterson, J. Carlyle

1953 Sugar Country: The Cane Industry in the South, 1753-1950. University of Kentucky Press, Lexington.

Smith, Louis M., Joseph B. Dunbar, and Lawson D. Britsch

1986 Geomorphological Investigation of the Atchafalaya Basin, Area West, Delta, and Terrebonne Marsh. U.S. Army Corps of Engineers: Vicksburg District, Vicksburg. Submitted to the U.S. Army Corps of Engineers: New Orleans District.

Smith, Steven, Philip G. Rivet, Kathleen M. Byrd, and Nancy W. Hawkins

1983 Louisiana's Comprehensive Archeological Plan. Louisiana Department of Culture, Recreation and Tourism: Office of Cultural Development, Division of Archeology, Baton Rouge.

South, Stanley

1977 Method and Theory in Historical Archeology. Academic Press, New York.

Sprague, Roderick

1981 A Functional Classification for Artifacts from 19th and 20th Century Historical Sites. North American Archaeologist 2(3):252-262.

Squires, M.T.

1882 Report of Captain M.T. Squires. In Official Records War of the Rebellion Union and Confederate Armies. Series I, Vol. VI. U.S. Government Printing Office, Washington.

Stapp, Darby, Julia Longnecker, and Dixie Ehrenreich

1984 1983 Test Excavations at 10-CW-159, The Pierce Chinese Mining Site. University of Idaho Anthropological Research Manuscript Series No. 80. Laboratory of Anthropology, University of Idaho, No. 80. Moscow.

Stuart, David R., and Jerome A. Greene

1983a An Archeological Survey of the Proposed Bayou Lamoque Revetment (M-33.5 to 32.1-L). National Park Service: Southeast/Southwest Team, Denver. Submitted to the U.S. Army Corps of Engineers: New Orleans District, New Orleans.

1983b An Archeological Survey of the Proposed Fort Jackson Revetment (M-23.3 to 21.9; 20.5-R). National Park Service: Southeast/Southwest Team, Denver. Submitted to the U.S. Army Corps of Engineers: New Orleans District, New Orleans.

Stuart, David R., and Jerome A. Greene

- 1983c An Archeological Survey of the Proposed Venice Revetment (M-18.7 to 10.5-R). National Park Service: Southeast/Southwest Team, Denver. Submitted to the U.S. Army Corps of Engineers: New Orleans District, New Orleans.

Surrey, N. Miller

- 1916 The Commerce of Louisiana During the French Regime 1699-1763. Columbia University Press, New York.

Swanton, John R.

- 1911 Indian Tribes of the Lower Mississippi Valley and Adjacent Coast of the Gulf of Mexico. Bureau of American Ethnology Bulletin 43. Smithsonian Institution, Washington, D.C.

- 1946 The Indian Tribes of the Southeastern United States. Bureau of American Ethnology Bulletin 137. Smithsonian Institution, Washington, D.C.

Teague, George A., and Lynette O. Schenk

- 1977 Excavations at Harmory Borax Works. Western Archaeological Center Publication in Anthropology No. 6. National Park Service.

U.S. Army Corps of Engineers

- 1985 U.S. Army Corps of Engineers: New Orleans District Engineers Project Maps. Document on file at the U.S. Army Corps of Engineers: New Orleans District.

U. S. Department of Agriculture

- 1975 Soil Taxonomy: A Basic System of Soil Classification for Making and Interpreting Soil Surveys. Handbook No. 436. Washington, D.C.

Vexler, Robert I. and William F. Swindler

- 1978 Chronology and Documentary Handbook of the State of Louisiana. Ocean Publications, Dobbs Ferry, New York.

Voorhies, Jacqueline K. (compiler)

- 1973 Some Late Eighteenth Century Louisianans: Census Records of the Colony, 1758-1796. Translated by Jacqueline K. Voorhies. The University of Southwestern Louisiana, Lafayette.

Vujnovich, Milos M.

- 1974 Yugoslavs in Louisiana. Pelican, Gretna, LA.

Weinstein, Richard Alan

- 1974 An Archaeological Survey of the Lower Amite River, Louisiana. Unpublished Master's Thesis, Department of Anthropology, Louisiana State University, Baton Rouge.

Weinstein, Richard and David Kelley

- 1984 Archaeology and Paleogeography of the Upper Felsenthal Region. Cultural Resources Investigation in the Cailion Navigation Pool, South-Central Arkansas. Submitted to the United States Army Corps of Engineers, Vicksburg District.

Wilken, Robert

1939 Crosses on the Delta: Historical Sketch Commemorating the Diamond Jubilee of Our Lady of Harbor Church 1864-1939. Ms. on file, Plaquemines Parish Library, Nairn, LA.

Williams, Thomas Harry, and A. Otis Hebert, Jr.

1965 The Civil War in Louisiana.

Wilson, Samuel, Jr.

1980 Architecture of Early Sugar Plantations. In Green Fields: Two Hundred Years of Louisiana Sugar, pp. 51-82. Center for Louisiana Studies, University of Southwestern Louisiana, Lafayette.

Winters, John D.

1963 The Civil War in Louisiana. Louisiana State University Press, Baton Rouge.

Wiseman, Diane E., Richard A. Weinstein, and Kathleen G. McCloskey

1979 Cultural Resources Survey of the Mississippi River-Gulf Outlet, Orleans and St. Bernard Parishes, Louisiana. Coastal Environments, Inc., Baton Rouge. Draft report submitted to the U.S. Army Corps of Engineers, New Orleans District. Contract No. DACW29-77-D-0272.

Writers Program

1941 Louisiana: A Guide to the State. Hastings House, New York.



**US Army Corps
of Engineers**
New Orleans District

Cultural Resources Series
Report Number: COELMP/PD-87-04

**FINAL REPORT OF CULTURAL RESOURCE INVESTIGATIONS
WITHIN THE U.S. ARMY CORPS OF ENGINEERS NEW ORLEANS TO VENICE
HURRICANE PROTECTION PROJECT**

APPENDIX A: SCOPE OF SERVICES

APPENDIX B: MODIFICATION TO SCOPE OF SERVICES

Final Report
December 1988

Agency for Conservation Archaeology
Eastern New Mexico University
Portales, New Mexico

Prepared for
U.S. Army Corps of Engineers
New Orleans District
P.O. Box 60267
New Orleans, LA 70160-0267

Distribution Unlimited

SCOPE OF SERVICES

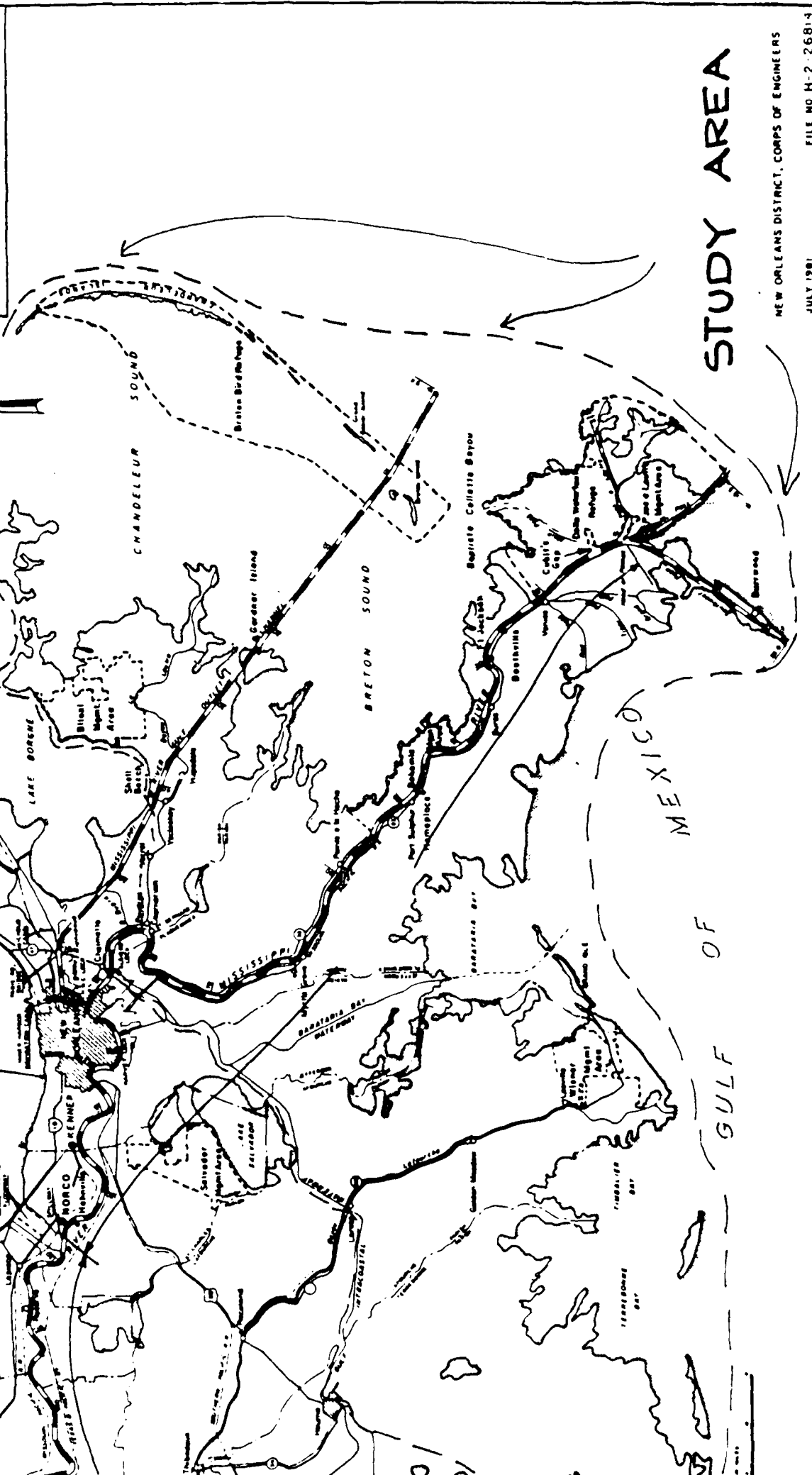
Greater Plaquemines Parish, Louisiana
Research Design and Final Report for the
New Orleans to Venice Hurricane Protection Project

1. Introduction. This contract effort is intended to provide the U.S. Army Corps of Engineers, New Orleans District with a regional and programmatic basis for compliance with Federal Historic Preservation laws. This effort will provide a data base, Historic Preservation Process, management plan, and Research Design for assessment of all Study Area COE project effects on National/State Register's and Register eligible properties and development of alternative mitigation measures. This effort will complete compliance requirements and also result in a final report for the entire New Orleans to Venice Hurricane Protection project. Cultural Resources which exist in the study area include National Historic Landmarks, National Register properties, historic archeological sites, prehistoric archeological sites, and shipwrecks. The geomorphology of the study area is complex. It is expected that this work effort will be a team effort between the contractor, COE, SHPO, and academic professionals. However, all decisions rest with the COE.

2. Background. The COE has been involved in the Greater Plaquemines Parish area since the 1800's and will continue to be involved in the foreseeable future. At present, there are many major and minor projects. Major projects include (but are not limited to): The New Orleans to Venice Hurricane Protection Project; Mississippi River Delta Region; Mississippi River Ship Channel; Mississippi River Levee Maintenance; Mississippi River Baton Rouge to the Gulf; Mississippi River Gulf Outlet; and Barataria Bay. A study area map is at Figure 1.

3. General Nature of the Work to be Performed. The work to be performed by the Contractor shall be the development of a Management Plan, Historic Preservation Process and, Research Design for Greater Plaquemines Parish Study Area, Louisiana and development of a final report for the New Orleans to Venice Hurricane Protection project. The Research Design will form the foundation upon which all cultural Resources management activities are based. The State Historic Preservation Officer and academic community will be informed of the Research Design development and will be sent copies of the completed design. They may suggest revisions or additions. The final New Orleans to Venice report will complete cultural resources compliance activities relative to that project (Figure 2).

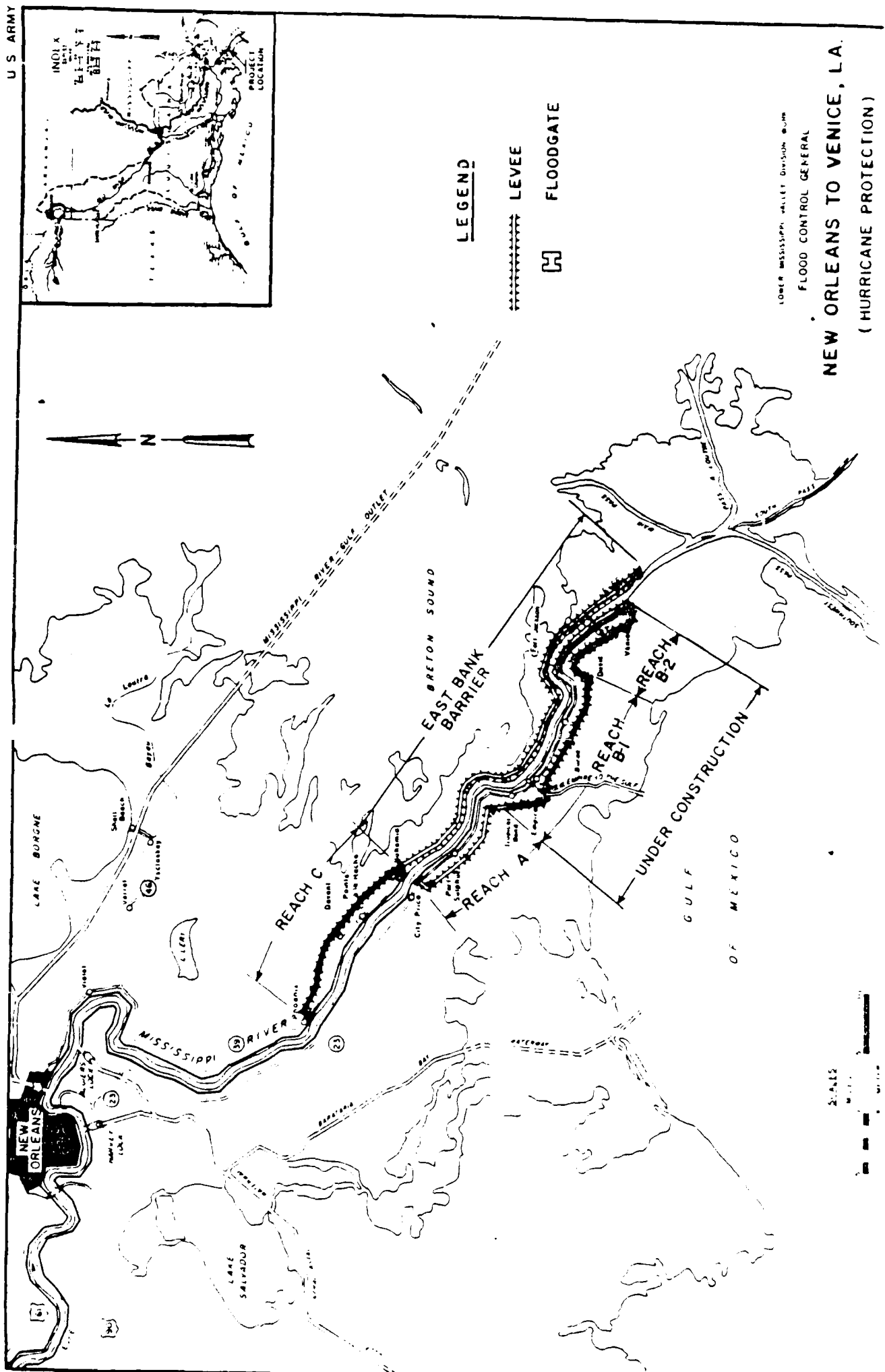
4. Description of the Study Area. The study area consists of Plaquemines Parish, and portions of St. Bernard, Jefferson, Lafourche, and Terrebonne Parishes, Louisiana, as shown on Figures 1 and 2. The Study Area



NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
JULY 1901
FILE NO H-2-26814

CORPS OF ENGINEERS

U S ARMY



NEW ORLEANS TO VENICE, LA.
(HURRICANE PROTECTION)

LOWER MISSISSIPPI VALLEY DIVISION
FLOOD CONTROL GENERAL

encompasses a polygon of over 2,000 square miles. This estimate should be confirmed by the Contractor during preparation of the proposal.

5. Study Requirements. The work will be conducted utilizing current professional standards and guidelines including, but not limited to:

- o The Research Design, Reporting Requirements, and Project Process provided as part of this work package;
- o the National Park Service's draft standards entitled, "How to Apply the National Register Criteria for Evaluation," dated June 1, 1982;
- o the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation as published in the Federal Register on September 29, 1983;
- o Louisiana's Comprehensive Archeological Plan dated October 1, 1983; and
- o The Advisory Council on Historic Preservation's regulations 36 CFR Part 800 entitled, "Protection of Historic and Cultural Properties," and Section 106, Update 3, entitled, "Manual of Mitigation Measures (MOMM)," dated October 12, 1982.
- o Notice to Lessees and Operators of Federal Oil and Gas Leases in the Outer Continental Shelf, Gulf of Mexico OCS Region, Number 75-3, Revision Number 1, Enclosures 1 & 2.

The work to be performed by the Contractor will be divided into four phases: Phase I - Preliminary Greater Plaquemines Parish Research Design (PRD); Phase II - Evaluate all New Orleans to Venice Cultural Work and Recommendations Against the PRD; Phase III - Execute Accepted Recommendations from Phase II; Phase IV - Finalize Greater Plaquemines Parish Research Design and Produce Final New Orleans to Venice Project Report.

Phase I - Development of the Preliminary Research Design

The successful research design is an outgrowth of cultural resource expertise. Well-written designs offer the COE and the cultural resource community several advantages over ad hoc and/or poorly-formulated approaches.

a. If problems, hypotheses, goals, and standards are set forth at the outset, all concerned parties are more likely to gather relevant data.

b. A stated and well-formulated research plan allows for COE managerial, public, and professional monitoring of the quality of investigative efforts and compliance actions.

c. From a management perspective, the progress, efficiency, and cost-effectiveness of an undertaking are more readily evaluated.

- d. The stated research design allows for better integration of compliance actions and professional cultural resource undertakings.
- e. A stated research design is an integral part of the cultural resource program and is the basis for research and compliance activity.

Each design involves combining the essential elements of investigation into an effective problem-solving sequence and is a plan concentrating on the components needed for the design's objectives to be realized and evaluated. Thus, the plan of investigation is a statement that concentrates on the components that must be present for the research objectives to be realized. Effective structuring of research designs is essential to productive cultural resource work. For a research design to efficiently guide cultural resource studies, it should contain at least seven essential elements:

- a. introduction;
- b. statement of specific research goals;
- c. specification of research procedures;
- d. research population sampling procedures;
- e. diagram of research design;
- f. analytical procedures; and
- g. additional features: may include a time table, personnel listing, facilities available, and budget.

The basic elements of a research plan design are the same in any competent cultural resource investigation. Each research goal requires a particular ordering of essential design elements. The qualified professional will avoid straight-jacketing data gathering operations into unalterable research designs. The research design will follow the Research Design Format specified in Enclosure 1.

The Preliminary Research Design will be developed primarily through literature review, historical research, records review, archival research, and so on. Limited reconnaissance is anticipated. In addition to the information required by the format at enclosure one, the research design will specifically include the following:

- a. Cultural History
 - (1) general overview garnered from NPS report
 - (2) detailed for Parishes
 - (3) prehistoric, historic, maritime, etc.

- b. Synopsis of all cultural resource work and what it was related to
 - (1) maps of surveyed areas (1:24,000)
 - (2) identified sites and located sites
 - (3) who did the work, dates, why, the conclusions, etc.
 - (4) areas cleared by SHPO
 - (5) areas (or sites) under MOA's
 - (6) evaluation of work
 - (7) what areas have been surveyed and at what level
 - (8) areas (or sites) that have undergone NHPA Sections 106 and 110 requirements.
- c. Synopsis of all development work
 - (1) projects - who, what, when, where, etc.
 - (2) maps (1:24,000)
- d. Locations of all known sites
 - (1) descriptions of sites
 - (2) by temporal period
 - (3) locational maps (1:24,000)
 - (4) distributional maps (1:24,000)
 - (5) include both recorded sites and those locations able to be garnered from records, e.g., plantations, forts, shipwrecks, etc.
 - (6) identify sites and districts eligible for or listed on the National/State Registers of Historic Places.
 - (7) Site Data will be placed on the ASIS (Archeological Sites Information Program)
- e. Locational probability and sensitivity analysis
 - (1) by area
 - (2) by type of site
 - (3) by temporal period
 - (4) maps (1:24,000)
 - (5) comparison of paleogeography and geomorphology as it relates to location probability and sensitivity.
- f. Geomorphology of river and paleogeography of study area
 - (1) maps of stream wanderings (1:24,000)
 - (2) dates of features
 - (3) study area paleogeography
 - (4) 1:24,000 study area maps of geomorphology and paleogeography.
- g. Thorough literature review - Academic and CRM
 - (1) identify research questions
 - (2) identify research interests

- (3) identify areas of profitable pursuit
- (4) identify management issues

- h. A listing and justification of types or categories of cultural resources that are/will be considered eligible or not eligible for the National Register of Historic Places.
- i. A detailed itemization of questions to be addressed by informational category by cultural resource.
- j. Incorporation of the Project Process, Enclosure 3 of this Scope, as an integral part of the Research Design.
- k. Incorporation of the Research Design and Reporting Standards formats as specific requirements of performance.

All maps should be on USGS Quad. maps. It is suggested that requirements A through C, Pages 5-6, be included as appendices to the Research Design.

A written draft Preliminary research design shall be submitted to the Contracting Officer's Representative (COR) within 22 weeks after work item award for review and approval. All review comments will be resolved and incorporated within 4 weeks after review comments are provided to the Contractor.

Along with the Draft Preliminary Research Design, the Contractor shall submit a list of no less than 10 persons who are professionally qualified to provide peer review.

Phase II. Evaluation of All Sites Known From New Orleans to Venice Project Work Against the Preliminary Research Design

The Contractor will review all reports prepared for cultural resource concerns on the New Orleans to Venice Hurricane Protection project. The report review will concentrate on the site evaluations, site recommendations promulgated, site information, and areas surveyed. All site data will be evaluated against the Approved Preliminary Research Design requirements and new recommendations will be made for each site. New site recommendations will be based and justified solely upon the Preliminary Research Design. The Contractor will then compare the old and new site recommendations.

Also in light of the Preliminary Research Design, the Contractor will compare areas surveyed on New Orleans to Venice, in the past, versus those areas requiring survey under the Preliminary Research Design and will develop a cost/productivity analysis, e.g. cost of survey vs. information gained.

A written draft report that includes a cost proposal for executing the new recommendations shall be submitted to the COR within 6 weeks, after the approval of the Preliminary Research Design, for review and approval. All

review comments will be resolved and incorporated within 2 weeks after submittal.

Phase III. Execution of Approved Phase II Recommendations.

Upon approval of the Phase II report, the Contractor shall proceed to execute the recommendations promulgated during Phase II. Phase III will be conducted in a time not to exceed 6 weeks.

Phase IV. Finalize Plaquemines Parish Research Design and Final Report for New Orleans to Venice Project.

During Phase III, the Contractor shall analyze the conduct of Phase III and the effectiveness of the Research Design in guiding Phase III. The Contractor shall use this analysis to produce a draft final Greater Plaquemines Parish Research Design to be submitted to the COR for review and approval within 4 weeks of completion of Phase III. All review comments will be resolved and incorporated within 4 weeks after submittal.

Within 8 weeks after completion of Phase III, the Contractor shall submit to the COR for approval and review, a draft final report for the New Orleans to Venice project. The final report shall compile and integrate all cultural resource work done on the New Orleans to Venice project. All review comments will be resolved and incorporated within 4 weeks after submittal.

6. Reports

a. Contract Deliverables

	Time for Efforts (Weeks)	NTE Time After Award (Weeks)	NLT End Date
<u>Phase I</u>			
a. Preliminary Research Design	22	22	
b. COE Review & Approval	4	26	
<u>Phase II</u>			
a. Evaluation of All NO-V work	6	32	
b. COE Review & Approval	2	34	
<u>Phase III</u>			
a. Execution of Approved NO-V Recommendations	6	40	
b. Emend Preliminary Research Design (concurrent w/Phase II & Phase IIIa)	12	41	

Phase IV

a. Draft Final Research Design	4	45
b. Final NO-V Report	8	48
c. COE Review & Approval of Final NO-V Report	4	52
d. COE Review & Approval of Draft Final Research Design	8	53
e. Incorporate Review Comments & Finalize Research Design	5	58
f. Produce Final Research Design	2	60

Note: In case of conflict between dates specified in Section 6a and other sections of this Scope of Service, Section 6a will govern.

b. Progress Reports

Monthly letter progress reports will be provided to the COR. These reports will itemize work accomplished, work to be accomplished, results, and identification of problems requiring resolution.

c. Draft and Final Reports (Phases 1, 2, & 4)

Six copies of the draft Preliminary Plaquemines Parish Research Design (Phase I) will be submitted to the COR for review and comment within 22 weeks after work item award. Upon incorporation of review comments and approval of the Preliminary Plaquemines Research Design (26 weeks after award), the Contractor will submit 20 copies and one reproducible master copy of the Preliminary Research Design to the COR within 2 weeks after approval of the Preliminary Research Design (28 weeks after the award). Six copies of the draft report of the evaluation of all sites on the New Orleans to Venice project (Phase II) will be submitted to the COR for review and comment within 32 weeks after work item award. Six copies of the draft final Plaquemines Parish Research Design will be submitted to the COR for review and comment within 44 weeks after work item award. Six copies of the draft final New Orleans to Venice project report will be submitted to the COR for review and approval within 48 weeks after work item award.

The written report shall follow the format set forth in MIL-STD-847A with the following exceptions: (1) separate, soft, durable, wrap-around covers will be used instead of self covers; (2) page size shall be 8-1/2 x 11 inches with a 1-1/2-inch binding margin and 1-inch margins; (3) the reference format of American Antiquity will be used. Spelling shall be in accordance with the U.S. Government Printing Office Style Manual dated January 1973. The body of the Research Design shall adhere to the format in Enclosure 1. The body of Phase II, New Orleans to Venice project report, shall adhere to the format in Enclosure 2.

The Contracting Officer will provide review comments to the Contractor. Upon receipt of the review comments on the draft documents, the Contractor shall incorporate and/or resolve all comments and submit draft final and final documents in accordance with the deliverables time schedule (paragraph 6a). Upon approval of the draft final documents by the COR, the Contractor will submit 40 copies and one reproducible master copy of the approved final documents.

In order to preclude vandalism, draft and final reports shall not contain specific locations or archeological sites. Site specific information, black and white photographs, and maps shall be included in appendices separate from the main document. The Contractor shall submit sufficient copies of these separate appendices to match the number of reports provided.

PROJECT PROCESS

1. Purpose

The New Orleans District, U.S. Army Corps of Engineers (NOD) recognizes its statutory, regulatory, and manualization responsibilities. NOD also recognizes that its Cultural Resource Program is primarily a support function for other activities and programs. During the conduct of support for other activities and programs and during the conduct of the Cultural Program, numerous individual requests for State Historic Preservation Officer (SHPO), Keeper of the National Register, and Advisory Council on Historic Preservation (ACHP) consultation and comment are required. This PMOA eliminates the need for numerous requests to the SHPO, Keeper of the National Register, and ACHP, satisfies statutory and regulatory requirements, and provides a process whereby cultural resources are given due consideration cost effectively, efficiently, and consistently.

2. Definitions

- a. Project area: Area of potential environmental impact.
- b. Inventory levels:
 - Literature Search
 - Sampling Inventory/survey
 - Intensive Inventory/survey
- c. Direct Impact - See 36 CFR 800, 40 CFR 1500-1508.
- d. Indirect Impact - See 36 CFR 800, 40 CFR 1500-1508.
- e. Eligible/Not Eligible - Eligibility for inclusion in the National Register of Historic Places, 36 CFR 60, 36 CFR 63.
- f. Mitigation - Actions taken to alleviate or reduce adverse effects to eligible or listed National Register Sites, 36 CFR 800, Advisory Council's Guidelines Manual of Mitigation (MOM).
- g. Issue Authorization - Agency official issues authorization to proceed with action.
- h. Research Design - A plan for data gathering that combines the essential elements of investigation into a plan for the treatment of eligible or listed properties that eliminate or reduce the adverse effect to these properties, that includes specification of data manipulation and extraction methods, and anticipated questions to be addressed by the mitigation.
- i. Partial Data Recovery - The consideration of a portion of the information contained in a site, utilizing the usual disciplinary controls to recover necessary and sufficient data, may include partial excavation,

engineering, or architectural drawings and so on, specific to each site. Phase I of mitigation, when complete, may constitute adequate mitigation for sites in question. Conducted on all eligible sites and requires a research design.

j. Additional Data Recovery - That data recovery at a specific site in addition to that conducted during partial data recovery which is required to recover more information to satisfactorily mitigate a site, Phase II of mitigation. Only conducted at extraordinarily important sites.

k. Shovel Test - If needed, several very limited uncontrolled shovel tests are placed intuitively in the site to answer the following questions in support of site evaluation. All sites need not be shovel tested. However, limited degradation to the site can be accepted provided extreme limitation of the number and size of the shovel tests are realized. Questions are:

- (1) Does the site have depth?
- (2) What is the nature and content of the site?
- (3) What types of information are obtained in the site?
- (4) What is the size of the site?
- (5) What is the importance of the nature, content, and information at the site?
- (6) What can the site be expected to produce in terms of answers to questions in general?

l. Qualified Professional - 36 CFR 69, 36 CFR 61, 32 CFR 229

m. Agency Official - NOD official (line manager) having responsibility for project/action.

3. Stipulations

a. Where surface disturbance can be avoided through stipulation of period or method of use, a determination of no impact will be made and authorization to proceed may be issued.

b. Prior to taking any Federal action, NOD (and the SHPO, if required in unusual situations) will identify areas within a proposed project and adjacent areas which have a potential for receiving direct or indirect impacts on historic and cultural properties (determined pursuant to 36 CFR 800.3). NOD will ensure that appropriate field inventories have been, or will be, completed on the project area and adjacent areas before it recommends approval. A report of the cultural resource inventory will be submitted to or prepared by NOD. In the event of a failure to reach an agreement with the SHPO regarding the appropriate inventory, NOD will request Council review in accordance with 36 CFR 800.6.

c. If any historic or cultural properties are identified as a result of an inventory conducted pursuant to 3.b., NOD will determine if such properties are included in the National Register of Historic Places. NOD will determine in consultation with the SHPO, for all sites not to be avoided, whether these sites are eligible for inclusion in the National Register of Historic Places. In cases of consensus, NOD will notify the Keeper of the National Register that certain sites have been determined eligible for the National Register. If consensus between NOD and the SHPO cannot be reached, in whole or in part, documentation will be forwarded to the Keeper of the National Register with a request for a determination of eligibility in accordance with 36 CFR Part 63. Steps will be taken to preclude adverse effects on such properties until a determination of eligibility has been made.

d. Where avoidance of cultural resources is prudent, feasible, and employed, appropriate means of protecting cultural resources will be implemented. These means may include, but are not limited to, signing, patrolling, fencing, and/or other physical or administrative measures. These means will be reported to the Louisiana SHPO as part of an annual report.

e. Before approving a project or action, NOD will review the proposed measures to minimize or prevent adverse effects (see 36 CFR 800.6) to historic and cultural properties and will ensure that:

- (1) The Criteria of Effect (36 CFR 800.3[a]) have been applied.
- (2) The Criteria of Adverse Effect (36 CFR 800.3[b]) have been applied, as appropriate, in accordance with the requirements of 36 CFR 800.4[b]).
- (3) Alternatives to a proposed course of action that would avoid or mitigate any adverse effect on properties included in, or eligible for inclusion in, the National Register of Historic Places have been analyzed. Documentation, including as appropriate, photographs, maps, drawings, and specifications, and other information sufficient to constitute a preliminary case report (36 CFR 800.13[b]) have been acquired.

f. Avoidance/mitigation requirements, including concurrence of the SHPO will be included as part of an approved project plan or action. NOD will notify the Council, in writing, of agreed upon avoidance/mitigation requirements. Information shall substantially conform to the requirements of 36 CFR 800.13(b)(4), (5), (6), and (11) relating to the content of preliminary case reports. Where agreement on avoidance/mitigation requirements cannot be reached between the SHPO and NOD, or where a National Historic Landmark, National Historic Park, National Historic Monument, or National Historic Site will be affected, the matter will be referred to the Council on a case-by-case basis, requesting the Council's involvement pursuant to 36 CFR 800.6.

g. Costs for all relevant cultural resource investigations shall be borne by the applicant/NOD.

h. Approvals will contain a condition or requirement providing that, if any previously unidentified prehistoric, historic, or other cultural or scientific properties are discovered during surface disturbing operations, work will cease in the immediate vicinity of the property, NOD will be notified, and such properties shall not be disturbed until NOD issues instructions.

4. Process

See Enclosure 1 for diagram of the process described below which implements the stipulations and which describes how NOD will conduct its Cultural Resource management Program. This enclosure only considers the process described in paragraph 4 and no other processes addressed in paragraphs 5 and 6.

STEP ONE:

Upon receipt of a third party application or an NOD proposed action, the agency official having authority will assign the project to an NOD cultural resource specialist for review. All third party applications and NOD undertakings will be reviewed by an NOD cultural resource specialist.

STEP TWO:

The reviewing cultural resource specialist will determine in which category of impact (no impact, surface impact, indirect impact, or unusual situation) all or portions of the project area may be placed.

a. For that portion where there is no impact, authorization to proceed may be issued by the agency official.

b. For that portion where there is a surface impact that will cause a definite surface disturbance, or where a definite indirect impact can be identified as occurring in a specific area, an intensive inventory will be performed.

c. For that portion where there is a surface impact that has a varying potential for disturbance, a literature search, sampling, or intensive inventory may be performed. Which type of inventory will be recommended by the cultural resource specialist to the agency official who will decide.

d. For that portion where unusual circumstances exist, e.g. disagreement between NOD management and cultural resource specialist or other circumstances (3.e. above), formal consultation with the SHPO and/or ACHP will determine the level of inventory required.

STEP THREE:

a. The required inventory will be accomplished by a qualified professional (NOD or applicant) cultural resource specialist, e.g. archeologist, historian, anthropologist, etc. Furthermore, each site or other cultural resources located during the inventory will have such necessary and sufficient information as required to allow a formal determination of eligibility for the National Register of Historic Places to be made from the data obtained during the inventory. For cultural resources with archeological potential, data will be obtained from surface manifestations, subsurface information manifested in erosional features, shovel testing, or any other limited disturbing activity, e.g. auger. Disturbance is minimal, without control, and only to the degree required to answer questions posed in the definition of shovel test.

b. An inventory report (guided by the format in Enclosure 2) is written that includes, in addition, site descriptions, site forms, site evaluations, recommendations for site eligibility, justifications of site significance, recommendations for which sites to avoid and not avoid within existing project design, and prudent and feasible alternatives.

c. Sample and Intensive inventory efforts will include an overview of past relevant work.

d. Upon completion of the inventory effort and report, the requirements for inventory, identification, site evaluations, and consideration of prudent and feasible alternatives will be considered met.

e. All third party and NOD inventory and reports will be reviewed by the appropriate NOD cultural resource specialist to assure adequacy of inventory and content of report. Informational shortcomings will be rectified by the applicant/NOD before or as part of authorization to proceed depending upon the criticality of the shortcoming.

f. Inventories which locate no cultural resources will describe the area examined and methodology employed.

g. For that portion of the project area where no sites exist, the agency official may issue authorization to proceed.

STEP FOUR:

a. For all project areas where cultural resources will be avoided, the agency official may issue authorization to proceed (see also 3.d.).

b. All sites that are not to be avoided will undergo a formal determination of eligibility for the National Register. Determination of eligibility will consist of formal consultation between the agency official and the SHPO. A letter requesting concurrence/non-concurrence with NOD eligibility determinations with attached inventory report will constitute NOD's consultation. Upon receipt of the SHPO's reply, consultation will be

complete for the eligibility determination. When consensus exists between NOD and the SHPO, the Keeper of the National Register will be notified that a consensus exists and specific sites have been determined eligible. When consensus does not exist, for all or any smaller number of sites, between NOD and the SHPO, a determination of the eligibility will be sought from the Keeper of the National Register and that project portion will proceed according to 36 CFR 800 on a case-by-case basis.

c. All sites determined not eligible will receive no further consideration and the agency official may issue authorization to proceed.

STEP FIVE:

All sites determined eligible on the basis of criterion 36 CFR 60.6(d) will be subjected to the following two-phase mitigation program. When this is agreed to by the SHPO, the ACHP will be notified. When consensus does not exist between NOD and the SHPO, comments will be sought from the Council in conformance with 36 CFR 800.

Phase I

a. A research design will be written that includes the essential elements of investigation (see Enclosure 3) and addresses each site to be considered, what will be done to the site, why it will be done, and what the anticipated gains are. This part defines the questions to be asked and states how they will be addressed and answered.

b. Institute partial data recovery from all sites. For sites with archeological potential, partial data recovery will include formal testing (of not more than 50% of the site) with professional control and care in accordance with the methodology specified and questions posed in the research design. Other types of cultural resources may require other partial data recovery techniques, e.g. mapping, engineering or architectural diagrams, etc. Partial data recovery is specifically designed to answer the questions posed in the Research Design.

c. Evaluate all information recovered from partial data recovery phase.

d. Write a professional report on the partial data recovery phase that includes a determination of whether the partial data recovery constitutes adequate data recovery for each site considered. For all sites from which adequate data have been recovered, no further work is required and the partial data recovery will constitute adequate mitigation.

e. Consultation with the SHPO will indicate concurrence/nonconcurrency with NOD's recommendations concerning the adequacy of Phase I mitigation and the requirement for Phase II.

f. For areas or sites where the SHPO concurs that Phase I efforts constitute adequate mitigation, the agency official may issue authorization

to proceed and the Council will be notified. The Keeper of the National Register will be notified that areas or sites at which Phase I is satisfactory mitigation, that these areas or sites are no longer eligible for the national Register.

g. For all areas or sites where the SHPO does not concur with Phase I determinations or Phase II recommendations, procedures specified in 36 CFR 800 will be instituted to obtain the comments of the ACHP.

Phase II

a. Refine research design in light of information obtained in Phase I to address the sites to be considered during Phase II.

b. continue work on only those sites of exceptional importance.

c. complete work and write professional report.

d. Seek SHPO concurrence that the completion of Phase II constitutes adequate mitigation for all sites considered during Phase II.

e. For all areas or sites where the SHPO does not concur, procedures specified in 36 CFR 800 will be instituted to obtain the comments of the Council.

f. For all areas or sites where SHPO concurs or 36 CFR 800 procedures are complete, the agency official may issue authorization to proceed and the Council will be notified. The Keeper of the National Register will also be notified that sites addressed during Phase II are no longer eligible.

With the completion of Phase I and Phase II requirements for eligibility determinations, SHPO consultations, mitigation, criteria of effect and adverse effect application, Keeper consultation, impact assessment, research designs, and ACHP consultation are complete for all "not avoided sites."

5. Properties eligible under other criteria

a. If it is determined that the affected historic or cultural property is eligible for inclusion in the National Register of Historic Places for any other reason, NOD, after determining the effect of the action on the property, will obtain the comments of the SHPO on a preliminary case report which includes the following information:

- (1) A general description of the proposed undertaking with explanatory material.
- (2) A description of the properties included in or eligible for inclusion in the National Register of Historic Places affected

by the undertaking, identifying the significant features of the properties.

- (3) An evaluation of the effect of the undertaking upon the properties included in or eligible for inclusion in the National Register of Historic Places.
- (4) A discussion of measures taken in considering the undertaking's effect on the properties included in or eligible for inclusion in the National Register of Historic Places, including an indication of the support or opposition of units of government, as well as public and private agencies and organizations; a review of alternatives that would avoid any adverse effects.
- (5) A proposal for a course of action to be implemented that would mitigate the adverse effect.

b. Upon completion of the preliminary case report it, with the comments of the SHPO, will be forwarded by NOD to the Council, for comment as required by the "Procedures for the Protection of Historic and Cultural Properties" (36 CFR 800). In the interim, no action will be taken that could result in an adverse effect on the subject cultural property.

6. Other situations

a. In situations (e.g. emergency) where the procedure and process outlined above (paragraphs 4 and 5) do not apply, when the time to undertake adequate mitigation is short, where failure to act expeditiously would result in project delays, and/or where agreement on an emergency mitigation plan has been reached between NOD and the SHPO, NOD will forward a preliminary case report (paragraph 5 and 36 CFR 800) with the proposed mitigation plan to the Council requesting an expeditious review and comment. Within 10 working days of receipt of such documentation, the Executive Director will notify NOD that the proposed mitigation plan is sufficient and he is preparing the required Memorandum of Agreement, or that he notes an objection.

b. If an objection is noted, the Executive Director will work with NOD and the SHPO in an attempt to satisfy his concerns, or request that the Chairman schedule a special meeting of the Council to consider the matter. If the Executive Director objects, until the objection is resolved, no action will be taken that could result in an adverse effect on the subject historic or cultural property.

7. Reports

a. The content, format, and timing of annual reports to the SHPO will be determined in consultation with the SHPO and will be included in this PMOA as Enclosure 4.

b. The content, nature, format, and timing of reports to the ACHP will be determined in consultation with the Council and will be included in the PMOA as Enclosure 5.

c. All inventory reports will meet guidance promulgated, acceptable professional standards, and in addition will include site descriptions, site forms, site evaluations, recommendations for site eligibility, justifications of site significance, recommendations for site avoidance, and the answers, for each site, to questions posed under the definition of shovel test. Format, other content, and acceptable professional reporting standards have been determined and are included in the PMOA as Enclosure 2.

d. All mitigation reports will meet or exceed existing Louisiana professional standards. The content and format for Phase I and Phase II Research and Design mitigation reports will meet or exceed requirements specified in Enclosures 2 and 3.

e. Until report formats and content are included in this PMOA as attachments, NOD will exercise its collective professional judgement.

8. Curation

All materials collected in the course of adhering to this PMOA will be permanently curated in a repository acceptable to NOD and the SHPO. Funds to support curation will be programmed into the NOD budget.

9. Failure to carry out the terms of the Agreement

Failure to carry out the terms of this Agreement requires that NOD again request the SHPO and Council's comment pursuant to 36 CFR 800. If NOD cannot execute this agreement, it shall not take or sanction any action or make any irreversible commitment that would result in an adverse effect to any National Register listed or eligible properties covered by the Agreement or that would foreclose upon the Council's ability to comment and consider modifications or alternatives to the undertaking that could avoid or mitigate the adverse effect until the commenting/consultation process is complete.

10. Effective Date, Revision, Review, and Termination

The agreement is effective on the date of the last signature. It may be revised or amended, at any time, by mutual agreement of the participating parties. The agreement will be reviewed at least once every 2 years. It may be terminated by any of the participants, provided the party initiating such termination provides 90 days notice and reasons therefore to the other parties.

REPORTING CULTURAL RESOURCE INVESTIGATIONS STANDARDS

The following report format outlines information that should be included in final cultural resource reports. The depicted format should be followed. The investigator is not required to limit the report scope to the information identified in this format outline. However, all items in this format should be adequately addressed in the report.

This format is designed to ensure a clear and adequate presentation of information, achieve uniformity in format, review and interpretation, and expedite Federally-mandated and negotiated compliance activities. Inclusive information provided by and included in cultural resource management reports (in the suggested format) expedite review, acceptance and approval of the cultural resource submission. Complete and original cultural resource reports should be submitted separately because some cultural resource information is not public information (ARPA, FOIA, PA). this also facilitates and expedites compliance activities. The suggested format also ensures compliance with mandated publication requirements.

I. Title Page

- A. Type and purpose of cultural resource management work, e.g., Research Design, initial inventory, inventory, sampling, testing, mitigation, and so on.
- B. Project Name and area of location
- C. Name of Contractor--major and subsidiary
- D. Principle Investigator, author, and institutional association
- E. Date of report
- F. Date of field work
- G. Type of project

II. Abstract

Provide a 250-word or less abstract of the report. The abstract must outline the report and refer to specific highlights from the report. This abstract is used for other reference systems, such as the National Technical Information System (NTIS).

III. Cultural Resource Management Summary

Provide an executive summary capsuling the salient points of the report. Provide concise statements about:

- A. work performed--who, what, when, where, how, how much, and why
- B. the cultural resource data base
- C. types and numbers of cultural resource located
- D. prehistoric and historic human use and occupations
- E. significance evaluations, and recommendations, National Register eligibility and impacts
- F. management options and recommendations--brief and by categories
- G. other points as required by report text

The summary should enable the reader to ascertain cultural resource management results without reading the entire report. The summary should not exceed 10 double-spaced typewritten pages. This portion of the report should be prepared last.

IV. Table of Contents

This part should also include a list of figures, tables, and appendices.

V. Introduction

- A. Identify purpose of report, e.g., why is it submitted--what is action proposed, compliance with Federal legislation, and so on.
- B. Contracting institutions and, if appropriate, ARPA permit(s) number, permit dates (issue and expiration), permit stipulations and limitations.
- C. Scope of work--contracted for and actually accomplished.
- D. Potential and/or actual project impacts on cultural resources.
- E. Dates work performed, by whom, and where--specifically.
- F. Project area location and type, general and specific--refer to maps.
- G. Land ownership--use maps as necessary.
- H. Disposition of field notes and collected material.
- I. Principal Investigator. Project Manager, and author--include name, phone number, highest degree, and discipline for all.
- J. Any exceptional features of the area, e.g., geology, archeology, paleontology, etc.

VI. External Environmental Parameters

- A. Physical features--maps may increase understanding.
 - 1. topography
 - 2. hydrology
 - 3. soils
 - 4. geology--include local and regional culturally-important lithic and mineral sources
 - 5. geomorphology
 - 6. and so on.
- B. Climatic conditions--past through present, and during CRM effort
- C. Flora--past through present; use maps of distributions
- D. Fauna--past through present; use maps of distributions

E. Remarkable areal features and/or resources

VII. Cultural Parameters

A. Background data sources--these should be consulted and documentation should be provided. The sources are not limited to the following:

1. National Register of Historic Places
2. SHPO and/or State Archeologist records
3. State register of significant properties
4. Historic documents
5. Ownership documents
6. University and museum documents; and so on
7. Published and unpublished survey and excavation reports
8. Regional and site-specific studies
9. Personal communications, informants--amateur and professional
10. Any EIS or EA, draft or final, that addresses the area or plan. Include name of preparing agency(ies) and date of issuance.

B. Historic and Prehistoric overview. (Some of VII A. may be integrated here, e.g., 6-9.)

1. Culture History--earliest to latest cultural manifestation. The temporal context should be established, itemized, documented, and explained. Major time periods (Paleo Indian, Archaic, etc.) should subsequently be divided into smaller subdivisions (Poverty Point, Telefunct, etc.) with local manifestations explained.
2. lifeways
3. Culture process
4. Estimates of the variability, potential density, distribution, and other characteristics of cultural resources expected.

C. Complete citations are required for all sources of information.

VIII. Project Research Design

Project Research Design must interface with Areal Research Designs; Site Research Designs must interface with Project Research Designs. The Historic and Prehistoric overview may suffice for a portion of the introduction. The categories following are minimum requirements:

A. Introduction

1. Historic and Prehistoric overviews--Part VII B. May suffice
2. Practical and theoretical significance
3. Theoretical basis for proposed investigation

4. Anticipated gains in cultural resource knowledge
5. Significance of the research:
 - a) practical social implications
 - b) significance for cultural resource theory
 - c) management significance
 - d) additional advantages

B. Statement of Specific Research goals

1. Specific aspects to be the focus of investigation
2. Specific hypotheses (if any) to be tested
3. Test implications for hypotheses
4. Definition of terms--must define operational definition of "site" as used in report--survey and so on.

C. Specification of Research Operations

1. Description of investigative tools or methodologies--to include but not limited to:
 - a) field methodology: specific project boundaries--how and why selected; include maps indicating area(s) surveyed, comments, and documentation on surface visibility, acreage, and so on.
 - b) recordation techniques--mapping, photographs, man-days, etc.
 - c) crew size, operation and composition, person hours, man-days, etc.
 - d) survey operations and how accomplished
 - e) data collection and control techniques and rationale
 - f) testing techniques and rationale
 - g) constraints on investigations
 - h) other, e.g., any areas not surveyed should be explained and justified
2. General descriptive procedures as well as quantifiable investigative operations.
3. Description of interfering variables and how they will be or were controlled.

D. Populations and Sampling Design

1. Methods used in delimiting aggregates studies. If a sample was chosen, the methods of selecting and studying the representative sample and their accuracies should be specified and justified. Include number and types of strategy and/or units and fractions. Describe selected sample units including topography, cover, slopes, dimensions, etc.
2. Specify any control population.
3. If a sampling strategy was chosen, specify controls for boundary effects, uneven sample size or configuration or any other effect.

4. Density of cultural resources to be expected, e.g., number of sites per number of acres--by type and period.
5. State accurately and completely the objective and strategy. Include definitions of sampling terms used and a discussion of the typology employed. Also discuss the population sampled, the sampling unit size, any strata developed, and the selection of the sample. Describe the field methodology utilized.

E. Analysis of Results

1. Type(s) of statistical and/or other analysis used.
2. Statement of types of results that would lead to rejection of hypotheses listed in 3.
3. Laboratory methods
 - a) Types of analysis performed and by whom
 - b) Method of chronological determination and by whom
 - c) Supporting persons, e.g., archeologists, geologists, statisticians, geomorphologists, paleontologists, ceramicists, historians, etc.

IX. Resources

A. Prosaic description of each site for each component at present and at the time of occupation.

1. Site number
2. Legal (cadastral) description and UTM location--in annex
3. Site relationship to surrounding land forms and nearest water
4. Site relationship to surrounding vegetation
5. Site size--horizontal and vertical
6. Features
7. Materials collected or observed--spatial distribution, variety, type, and resource made from
8. Site type/function with supporting evidence
9. Cultural/temporal affiliation
10. Elevation
11. Physical condition
12. USGS map or portion which clearly indicates the location of each site--in annex
13. Site relationship to other environmental variables, e.g., soils, other sites, aspect, and so on
14. Site maps--should be in a report annex
 - a) scale, north arrow, legend
 - b) test areas
 - c) artifact locations and/or concentrations
 - d) structures and features
 - e) intrusions--vandals, road, fence, subsidence, and so on
 - f) topographic features
 - g) accurate locational data

- h) planar diagrams of vertical and horizontal site attributes, including safety
- i) site datum is depicted.
- 15. Map(s) indicating each site's location in relation to the project area and specific areas planned for disturbance--in appendix
- 16. Site recording forms of sufficient detail will be included as an appendix to the report
- 17. Photographic recording of cultural resource locations is mandatory and will be included with each site description. All photo reproductions included will be of such quality that features, structures, concentrations, etc., are clearly discernible. In many instances, color photographs are recommended. Color photographs are mandatory for historical resources. A photo log should be included as an appendix to the report. The log should include roll number, type of film (black and white or color), orientation, UTM location of object photographed, photographer, and so on.
- 18. If no cultural resources were located, it will be explicitly stated. Conjectural reasons for the apparent site absence will be discussed in contextual, environmental, prehistorical, and historical relevant terms.

B. Description and Analysis of Artifact Assemblage.

- 1. Topological assessment
- 2. Use, function analysis
- 3. Behavioral aspects
- 4. Graphic representations--line drawings and photographs
- 5. Temporal aspects
- 6. Significance
- 7. Resource exploitation aspects
- 8. Cultural indicators
- 9. Size, weight, and dimension characteristics, and so on
- 10. Artifact catalogues should be included in appendix to CRM report
- 11. Spatial and locational aspects
- 12. Provenience--Isolated finds will be included in this discussion
 - a) map indicating the location of the IF
 - b) UTM's will be provided
 - c) an isolated find record will be included as an appendix to the report

X. Synthesis and Future Research Orientations

- A. Provide a summary of the cultural resources located. Use graphics and tables, as appropriate.

- B. Integrate results into the regional framework, the regional and project area research designs, and the State Historic Preservation Plan.
- C. Discuss the quantitative and qualitative manipulation of the data. Include estimates of the number, density, distribution of cultural resource locations, and determine the diversity of cultural resources.
- D. Discuss the cultural resource aspects identified in X.C. in different portions of the project area. For example, density may be discussed from the point of view of sites, components, cultural, or functional types
- E. Discuss any significant correlations of cultural resources with the external environment and with each other.
- F. Compare the results of this investigation with other investigations in the same area or at the same project area.
- G. Discuss the results obtained by specific objectives which the investigation was designed to achieve.
- H. Discuss the reliability of the results, changes in the original objectives, or strategy, and major gaps in the data base.
- I. Discuss results as they pertain to culture history, lifeways, and cultural process.
- J. Discuss perceived patterns and relevant processes.
- K. Provide a summary of relevant data.
- L. Discuss questions and issues raised by the results that are related to future cultural resource research and cultural resource management--locally, state-wide or nationally.
- M. Suggest future investigative needs and directions. These may be specific or general.
- N. Relate results to stated or other investigative objectives.

XI. Management Options and Evaluations

A. Evaluations

- 1. Apply National Register Criteria of eligibility to each site.
- 2. Apply the aspects of significance, e.g., ethnic, religious, etc, as appropriate.

3. Each site will have its significance or non-significance fully justified and explained.
4. Information and documentation forwarded to substantiate eligibility recommendation will be sufficient to allow the COE to seek determinations of National Register eligibility.
5. For sites recommended as eligible for the National Register by the cultural resource professional, information will be submitted on completed National Register forms.

B. Project Impacts

1. Site locations should be compared to project layout, and activities, facilities maps, post project contour and roads, etc., to assess direct and indirect impacts.
2. Discuss proposed or actual impacts on each site located or other known cultural resources. Refer to maps. This should clearly identify all envisioned impacts on each site, detailing the type of anticipated impact, direct and indirect.
3. For each site included in or eligible for the National Register, this assessment will be in accordance with 36 CFR 800.3(a) and 36 CFR 800.3(b).

C. Management Options

Methods of mitigating adverse impacts on each significant site will be stated and discussed in detail for each site. Discussions should include the rationale that justifies the mitigation options.

XII. Management Recommendations

Based on impacts, significance and eligibility recommendations, the report must make recommendations for the cultural resource clearance of the proposed project. Recommendations must be site specific and consideration must be given to protection plans and nomination of eligible sites. If significant cultural resources are located in sufficient numbers, consideration will be given to contiguous district, non-contiguous district or individual nomination. If significant cultural resources cannot be protected or conserved and data recovery is recommended, consultations will begin and a mitigation plan, in the format of Section 8 of this format, will be submitted with the cultural resource report. The mitigation plan must meet the Advisory Council's Guidelines for eliminating adverse effects to National Register Properties.

XIII. Appendices and Annexes

Provide relevant ones developed as a result of the preceding sections or other needs. Minimum requirements include:

- A. Site forms
- B. Artifact catalog
- C. Photograph log
- D. IF Catalog
- E. Site location data, maps, and so on
- F. Charts, graphics, tabulations, and so on

XIV. References

- A. cited
- B. relevant

RESEARCH DESIGN

INTRODUCTION

The cultural resources research design forms the foundation upon which all Cultural Resources Management activities are based. The design has three steps that must be undertaken consecutively:

- a. Acquisition of background information.
- b. Reconnaissance.
- c. Development of research design.

The State Historic Preservation Officer and academic community should be informed of these activities and may be sent a copy of the completed research design and may suggest revisions or additions. A qualified archeologist or other cultural resource manager must prepare the research design.

ACQUISITION OF BACKGROUND INFORMATION

Data review is a thorough literature and archival review followed by the analysis, synthesis, and evaluation of data and the establishment of a research design pertaining to previously identified and potential cultural resources, geological, paleontological, and environmental resources including sites eligible for or listed in the National Register of Historic Places or the National Landmarks Register. The data review provides an estimate of the variability, potential density, distribution, and other characteristics of cultural resources expected in the study area. It also provides information pertaining to problems that need to be solved and the background required for hypothesis formulation and testing. This information forms the basis for a cost-effective research design. When the background information has been acquired, a general cultural resource overview should be prepared and included in the research design.

A qualified archeologist and/or other cultural resource professionals should acquire and interpret the background information. The professional can steer the search toward relevant data sources in less time and thus be more cost-effective than an unqualified person because the qualified professional is familiar with available data sources that pertain to any given region and will know where to search for them.

RECONNAISSANCE

Becoming familiar with the region and resources being studied is both a general investigation of the biological and topographic characteristics of the study area and an unstructured and unsystematic attempt to locate previously identified resources. Generally, a reconnaissance is not designed scientifically. Because cultural resource types, densities, and information discovered during the reconnaissance may not accurately represent the area's resources, Cultural Resource Management cannot be

accurately performed with data derived solely from a reconnaissance. However, most often a reconnaissance will enable the professional to formulate a better research design that adequately addresses the various parameters associated with a particular cultural resource effort. The cultural resources reconnaissance is structured in part by the background information. During reconnaissance, the cultural resource professional:

- a. gains a general impression of the terrain characteristics where he will have to traverse or work;

- b. gains a general understanding of the biological forms within the area's ecology;

- c. attempts to locate known/unknown sites to determine general characteristics of visibility;

- d. makes photographs of sites, including possible aerial photographs;

- e. tours the study area and notes characteristics of cultural resource areas;

- f. verifies map locations of all cultural resources;

- g. modifies the research design to incorporate data derived from reconnaissance.

Physical reconnaissance produces far better planning and execution than a map reconnaissance.

DEVELOPMENT OF RESEARCH DESIGN

1. Introduction. The successful research design is an outgrowth of cultural resource expertise. Well-written research designs offer the Federal land managers and the cultural resource community several advantages over ad hoc and/or poorly formulated approaches.

- a. If problems, hypotheses, goals, and standards are set forth at the outset, all concerned parties are more likely to gather relevant data.

- b. A stated and well-formulated research plan allows for COE managerial, public, and professional monitoring of the quality of investigative efforts and compliance actions.

- c. From a management perspective, the progress, efficiency, and cost-effectiveness of an undertaking are more readily evaluated.

- d. The stated research design allows for better integration of compliance actions and professional cultural resource undertakings.

- e. A stated research design is an integral part of the cultural resource program and is the basis for research and compliance activity.

2. The Research Design.

a. Research design. Each design involves combining the essential elements of investigation into an effective problem-solving sequence and is a plan concentrating on the components needed for the design's objectives to be realized and evaluated. Thus, the plan of investigation is a statement that concentrates on the components that must be present for the research objectives to be realized. Effective structuring of research designs is essential to productive cultural resource work. The main elements for the design are Formulation for Research Design and Essential Elements of Research Design.

b. Formulation of a Research Design. In cultural resource management, the wide variety of investigative intentions range from testing precisely defined hypotheses to general explorations of subjects. Some of the main types of productive cultural resource research goals are:

(1) Description of selected cultural resource subjects. This type of investigation has been accorded rather low status in much of the recent cultural resource literature. However, the examination of a wide range of literature indicates that descriptive investigations may be the more prevalent style in some other sciences. The style is sometimes disguised by post hoc reference to hypotheses, theoretical models, and so on. In the archeological literature, studies often involve questions such as: What are the main features of organization of the market system?; What is the role of animal husbandry?; or reports on topics such as: A new type of projectile point.

(2) Examination of systematic linkages between behavioral traits evident in cultural resource data. Probably the most common hypothesis testing is the examination of covariation of a element, X, with a trait, Y, with which it is thought to be linked casually. An example is a test of the proposition that archeological site locations are related to various topographical characteristics.

(3) Search for the cause phenomena. This type of research question is gaining popularity in cultural resources research. The investigative goal is a search for the independent variables. Examples may include the following: What causes human society to change?; What caused the Pueblo disappearance from parts of the American Southwest?; What causes agriculture to be adopted?

(4) Examination of the effects or consequences of particular events. Examination of the effects implies an important independent variable and attempts to identify the dependent variables. Examples may include the following: What are the social and cultural effects of a technological innovation, such as new agricultural practices?; or, What are the social and cultural effects of an environmental change?

(5) Complex research designs involving combinations of the preceding four types. Archeological investigation usually involves complex combinations or the foregoing investigative goals. The archeologist must

sort out the basic analytical units and clarify the research design in terms of each goal as an independent investigative enterprise. Many investigative activities appear hazy in conceptualization because they combine several different questions that have not been segmented or divided into manageable elements.

Furthermore, an archeologist may wish to test alternative hypotheses concerning the relationships among sites, artifacts, location, and resources. Although the problem may be broken down into an examination of the covariations of each pair of patterns, the logic of the problem also includes linking the correlations among the four patterns into a more complex system. These problems of a similar correlation type are often the precursors of complex systems investigations.

(6) Investigation of Complex Systems. When the archeologist or other cultural resource manager is interested in the interaction of several variables observed simultaneously, it may be a systems investigation. An examination of the covariations among pairs of variables is often a precursor to systems investigative problems. Setting up complex models of interaction among variables is useless unless the relationships among some of the pairs have been established preliminarily. An example may include: Most computer simulation studies of cultural resource data are examples of systems research as are studies that treat several variables simultaneously.

c. Essential Elements of Research Design. For a research design to efficiently guide cultural resource studies, it should contain at least seven essential elements:

- (1) Introduction
- (2) Statement of specific research goals
- (3) Specification of research procedures
- (4) Research population sampling procedure
- (5) Diagram of research design
- (6) Analytical procedures
- (7) Additional features may include a time table, personnel listing, facilities available, and budget.

The basic elements of a research plan design are the same in any competent cultural resource investigation. Each research goal requires a particular ordering of essential design elements. The qualified professional will avoid straight-jacketing data gathering operations into unalterable research designs.

3. Cultural Resources Research Design Model; Example.

a. General--The basic elements of a research plan are the same in any good cultural resource study. However, for some of the investigative goals previously discussed, the pieces are organized differently. The following outline is structured in terms of investigative goal number 4--Examination of the effects or consequences of particular events. The purposes are to depict an ideal design model applicable to all types of cultural resource

management research designs. Additionally, the design is applicable to programmatic, site specific, sampling work, intensive inventory problems, mitigation programs, and other cultural resource questions. The following example constitutes the general format.

b. Research Design Example

(1) Introduction

(a) Historical background; brief sketch of the area; of known cultural resources; of situation prior to innovation or event; chronology of events; brief summary of relevant studies and literature.

(b) Practical and theoretical significance.

(c) Theoretical basis for proposed investigation.

(d) Anticipated gains in cultural resource knowledge.

(e) Significance of the investigation:

(1) Practical social implications.

(2) Significance for cultural resource (discipline) theory.

(3) Management significance.

(4) Additional advantages.

(2) Statement of Specific Research Goals:

(a) Specific aspects to be the focus of research.

(b) Specific hypotheses (if any) to be treated.

(c) Test implications for hypotheses.

(d) Definition of terms.

(3) Specifications of Research Operations.

(a) Description of intended research tools to be used as the basis for operational definition of key terms.

(b) Mention of general descriptive procedures as well as quantifiable research operations.

(c) Mention of hypothesis generating features of initial investigation phase.

(d) Description of interfering variables and how they will be controlled.

(4) Populations and Sampling Design.

(a) Methods to be used in delimiting aggregates to be studied if a sample is derived. The methods of selecting and studying the representative sample should be specified.

(b) Specification of any control population.

(c) Specification of the statistical universe, study population, and so on.

(5) Diagram of Research Design.

The cultural resource professional should develop a diagram to visualize the logic of data gathering operations and to clarify points of the research strategy. This diagram must show the following information:

(a) The prior situation in both populations--under study and control.

(b) Clear evidence that the event happened or the innovation was introduced in one group and not the other.

(c) Observations on dependent variables for both populations.

(d) Recycling, feedback aspects of on-going investigations.

(6) Analysis of Results.

(a) Type of statistical and/or other analysis to be used.

(b) Statement of types of results that would lead to the rejection of the hypotheses listed.

(7) Additional Features Of A Research Design Not Part Of Essential Elements But That Should Be Present.

(a) Timetable (chronological sequence with estimated dates.)

(1) Travel and preparations before entering field or conducting work.

(2) Initial period--rapport building, etc.

(3) Construction and development of research instruments.

(4) Prelisting of research tools and techniques.

- (5) Collection of main data as specified in research design.
- (6) Preanalysis of data before leaving field.
- (7) Collection of further supporting data as time allows.
- (8) Selection of samples.
- (9) Data analysis and writing.
- (10) Publication.
- (11) etc.

(b) Personnel.

- (1) Principal Investigator.
- (2) Assistants (including local persons in the area).
- (3) Supporting persons in other fields, e.g., archeologist, paleontologist, geologist, geomorphologist, historian, statistician, etc.

(c) Facilities Available.

- (1) In field and at home base for storage, analysis, conservation, etc.
- (2) Supporting information sources.
- (3) Data analysis and other assistance (Computer Center, consultants, technical editors, access to comparative collections, and so on).

(d) Budget.

- (1) Personnel--salaries, wages, insurance, etc.
- (2) Equipment--tape recorder, cameras, typewriter, microscopes, etc.
- (3) Supplies--paper, notebooks, film, etc.
- (4) Travel--to research area, interval while at site, etc.
- (5) Computer and other data-processing facilities.

- (6) Miscellaneous data-collection costs, e.g., visit to local collector, museum, etc.
- (7) Duplicating--maps, records, etc.
- (8) Shipping, mailing, etc.
- (9) Writing and data analysis.
- (10) Publication.
- (11) Communications.
- (12) Curation.

SUMMARY

Each type of investigative goal requires its particular ordering of essential design elements. For example, a general descriptive study requires no hypothesis testing and usually includes no control samples or populations. The operational definition of terms often arises from the initial phase of research, rather than being defined in advance. On the other hand, research designs using advanced mathematical or statistical manipulations can be visualized as equations or dummy tables to clarify the types and relationships among the variables. The cultural resource professional will avoid pigeon-holing data gathering operations into unalterable research designs. However, one should remain fully aware that planless fact gathering usually leads to a hodgepodge of useless data and materials, to degradation of the resource base, and to problems of compliancy. The good research design is a plan for resolving specified problems and it may be modified at any time to incorporate new data or solve new problems.

cognizant that the currently identified site exceeds our original estimate. We would like this information included in ASIS and the prosaic parts of the SELCRMP. The extension of the delivery date for the Draft Final should eliminate your concerns about time for this task.

g. The current SOW requirements for mapping is changed. You are directed to provide two sets of USGS Quads that cover the entire study area. With each Quad sheet, you are to provide milar overlays depicting the mapping requirements specified in paragraph 5. Study Requirements, Phase 1, specific requirements for the research design, a-g, page 6. You are to provide a budget amendment for this tasking if an amendment is required to reflect cost changes.

h. Phase 2, the evaluation of all sites known from the New Orleans to Venice Project work against the preliminary research design is eliminated.

i. You are directed to compile and write the Final New Orleans to Venice Hurricane Protection Project report. This report will be written to the format provided for reports. The delivery date for this report will be September 14, 1987. Any recommendation for additional work will be accompanied by a research design. This research design will be written to the format provided for research designs.

j. For your fixed and rotary winged aircraft flights, you are allowed to bill by cost provided the maximum reimbursable cost specified in the existing contract is not exceeded.

k. You are directed to incorporate review comments commensurate with discussions and decisions relative to each comment conducted and arrived at during the May 14 and 15 discussions. Should questions arrive as to decisions made about each comment, contact me.

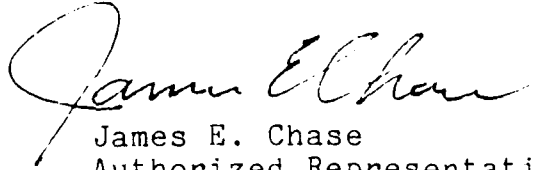
l. The Geomorphology parts of the SELCRMP, when they are complete, will be reviewed by a Geomorphologist at the COE Waterways Experiment Station.

Should the new tasking cause project costs to exceed the existing total project costs currently in effect, you are directed to submit a cost proposal for those new taskings.

Should questions arise, do not hesitate to contact me at (504) 862-1760. I anticipate a close working relationship with

you so that the project can move forward as smoothly as possible.

Sincerely,

A handwritten signature in cursive script, appearing to read "James E. Chase". The signature is written in dark ink and is positioned above the printed name and title.

James E. Chase
Authorized Representative
of the Contracting Officer



**US Army Corps
of Engineers**

New Orleans District

Cultural Resources Series
Report Number: COELMP/PD-87-04

**FINAL REPORT OF CULTURAL RESOURCE INVESTIGATIONS
WITHIN THE U.S. ARMY CORPS OF ENGINEERS NEW ORLEANS TO VENICE
HURRICANE PROTECTION PROJECT**

**ANNEX A: RESEARCH DESIGN FOR PHASE I MITIGATION
OF FORT JACKSON, 16PL38, PLAQUEMINES PARISH, LOUISIANA**

Final Report
December 1988

Agency for Conservation Archaeology
Eastern New Mexico University
Portales, New Mexico

Prepared for
U.S. Army Corps of Engineers
New Orleans District
P.O. Box 60267
New Orleans, LA 70160-0267

Distribution Unlimited

**FINAL REPORT OF CULTURAL RESOURCE INVESTIGATIONS
WITHIN THE U.S. ARMY CORPS OF ENGINEERS NEW ORLEANS TO VENICE
HURRICANE PROTECTION PROJECT**

**ANNEX A: RESEARCH DESIGN FOR PHASE I MITIGATION
OF FORT JACKSON, 16PL38,
PLAQUEMINES PARISH, LOUISIANA**

By

**John L. Montgomery, Keith Landreth, Joan Exnicios
Kathleen Bowman, and James Bowman**

**John L. Montgomery, Ph.D.
Principal Investigator**

Final

December 1988

**Prepared for the Department of the Army, New Orleans District, Corps
of Engineers, P.O. Box 60267, New Orleans, Louisiana 70160, Under
Delivery Order No. 0001, Contract No. DACW29-86-D-0094**

**Agency for Conservation Archaeology
Eastern New Mexico University
Portales, New Mexico**

TABLE OF CONTENTS

	Page
LIST OF FIGURES	A-iii
I. INTRODUCTION.	A-1
MITIGATION PROCESS.	A-3
PROJECT RESEARCH DESIGN	A-4
PRACTICAL AND THEORETICAL SIGNIFICANCE.	A-5
ANTICIPATED GAINS IN CULTURAL RESOURCE KNOWLEDGE.	A-6
SIGNIFICANCE OF THE INVESTIGATION.	A-6
<i>Practical Social Implications.</i>	A-6
<i>Management Significance.</i>	A-6
SPECIFIC RESEARCH GOALS.	A-7
II. RESEARCH DESIGN FOR PHASE I MITIGATION OF FORT JACKSON (16PL38) PLAQUEMINES PARISH, LOUISIANA.	A-8
HISTORICAL BACKGROUND.	A-8
PREVIOUS ARCHEOLOGICAL INVESTIGATIONS	A-15
MANAGEMENT HISTORY.	A-15
DEFINITION OF IMPACTS.. . . .	A-15
RESEARCH DESIGN.. . . .	A-17
<i>Statement of Specific Research Goals.</i>	A-17
SPECIFICATION OF RESEARCH OPERATIONS	A-18
<i>Historical Research</i>	A-18
<i>Site Specific Background.</i>	A-18
<i>Archeological Background.</i>	A-20
<i>Archeological Aspect.</i>	A-20
III. PROJECT SCHEDULE AND DELIVERY REQUIREMENTS.	A-25
PERSONNEL.	A-25
TIMETABLE.	A-25
REPORT PREPARATION.	A-25

LIST OF FIGURES

Figure		Page
A-1.	Engineering plan illustrating the location Fort Jackson (16PL38) within the NOV Area.	A-2
A-2.	Location map of Fort Jackson (16PL38).	A-9
A-3.	Aerial photographs of Fort Jackson (16PL38).	A-10
A-4.	Excerpt of 1868 Mississippi River Commission Map showing location of Fort Jackson (16PL38)	A-14
A-5.	Engineering plan and profile showing proposed construction corridor at Fort Jackson (16PL38).	A-16
A-6.	Flowchart of process applied to Phase I mitigation of Fort Jackson (16PL38).	A-19

I. INTRODUCTION

The U.S. Army Corps of Engineers, New Orleans District (NOD-COE), is proposing to expand an existing hurricane protection levee along the west bank of the Mississippi River from Venice to Happy Jack in Plaquemines Parish, Louisiana. This project, known as the West Bank Barrier Levee, is part of six integrated hurricane protection levee projects known collectively as the New Orleans to Venice Hurricane Protection Project (NOV). Internal designations for the six projects are Reach A, Reach B-1, Reach B-2, Reach C, the East Bank Barrier Levee, and the West Bank Barrier Levee. All planned activity, with the exception of the East Bank Barrier Levee, are expansions and upgrades to raise the width and height of existing levees. Construction plans for the East Bank Barrier Levee have been cancelled at present.

The West Bank Barrier Levee may directly impact portions of Fort Jackson (16PL38), a National Landmark. Fort Jackson was built during a ten year period between 1822 and 1832 and is presently being used as a Parish museum (Appendix D:Figure D-1). The proposed levee expansion will occur within the boundaries of the National Landmark site. Two management options were proposed in the *Final Report of Cultural Resource Investigations Within the U.S. Army Corps of Engineers New Orleans to Venice Hurricane Protection Project*. The first option is to confine all expansion activities to the existing levee corridor right of way (ROW). Construction of the existing levee has already disturbed this area. The additional filling and grading activity associated with the levee expansion, if confined to this area, should not affect the integrity of the site. Should construction activities occur outside the existing ROW, then the second management option should be followed. This option specifies what will be used to mitigate potential impacts to those portions of the site affected by the project. Moving the levee is not considered a management alternative. Previous locational studies conducted by the agency, in conjunction with the projected cost of relocating and possibly redesigning the proposed levee, makes this option infeasible. If activity cannot be confined to the existing corridor then the research design presented herein is the preferred, prudent, feasible, and adequate treatment for arriving at a finding of "No Adverse Effect" within the context of the proposed undertaking. However, any proposed mitigative work at this Landmark is subject to approval by the Louisiana State Historic Preservation Office (SHPO), the Advisory Council on Historic Preservation (ACHP) and the Plaquemines Parish Commission (the present owners of the property).

This research design is proposed as a means and vehicle of mitigation, should it be required. While its design is intended to be flexible to accommodate possible contingencies in fieldwork and analysis, the framework provided for the proposed investigation is comprehensive. The research design specifies the orientation of the proposed investigation; the problem areas to be addressed; the methodological approaches to be employed during fieldwork and analysis; and summaries of report preparation, scheduling and curation specifications. The purpose of the

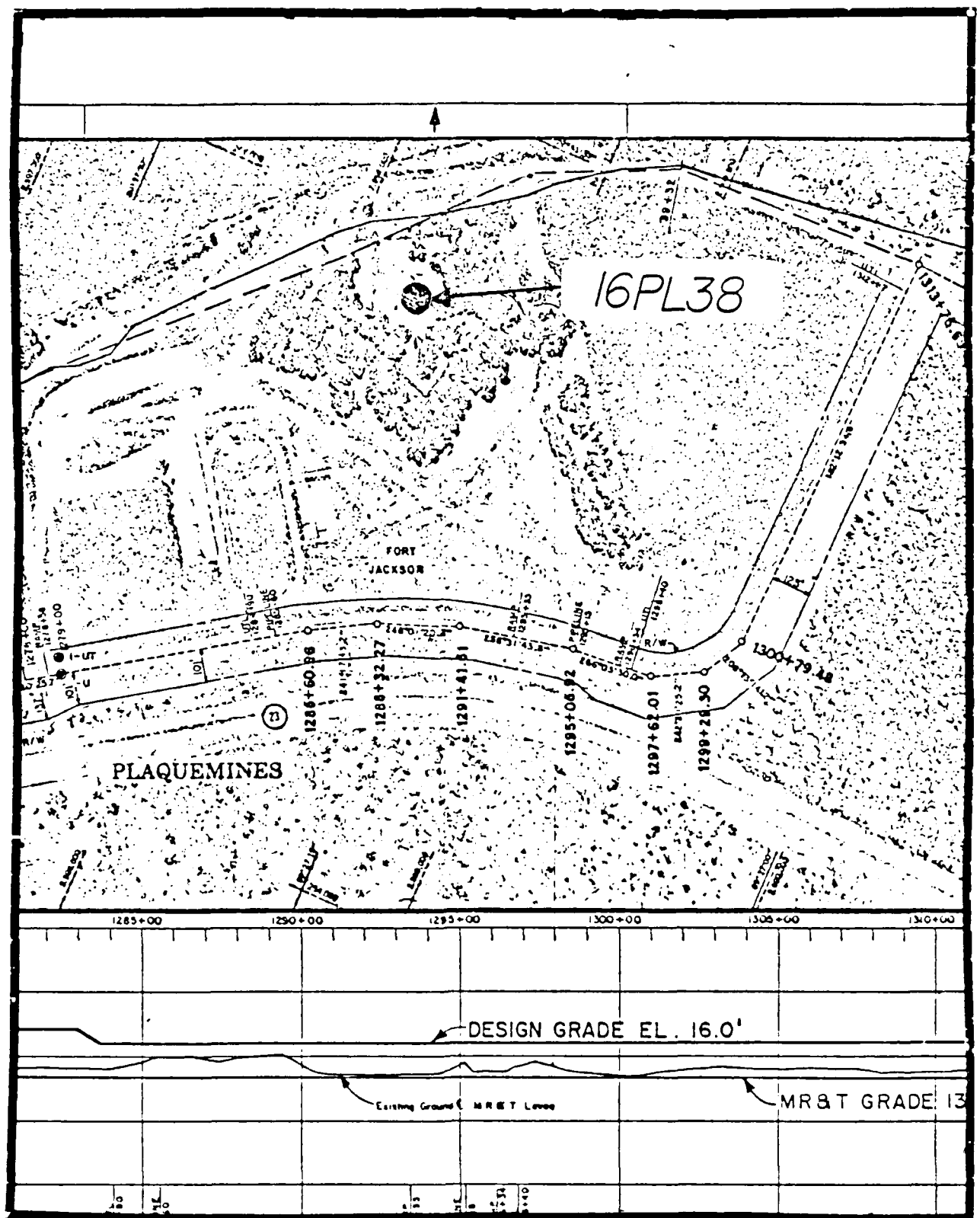


Figure A-1. Engineering plan illustrating the location of Fort Jackson within the NOV Area.

proposed investigation is to collect information significant to the history of the United States, Louisiana, and Plaquemines Parish before such information is destroyed by construction activities.

Research at Fort Jackson is a mitigation effort composed of two phases. A description of the Phase I and Phase II processes is provided below. Phase II requirements depend on Phase I efforts and results. These requirements cannot be specified in greater detail until Phase I is finished.

MITIGATION PROCESS

If levee enlargement activities at Fort Jackson cannot be confined to the existing ROW, the site will be subjected to the following two-phase mitigation program. When this is agreed to by the Plaquemines Parish Commission, the Louisiana SHPO, and the ACHP, the data recovery phase will begin.

Phase I

- a. A Research Design will be written that includes the essential elements of investigation and addresses the site to be considered, what will be done to the site, why it will be done, and what the anticipated gains are. This part defines the questions to be asked and states how they will be addressed and answered.
- b. The Research Design will then be sent to the SHPO and the ACHP for review and approval. If all parties concur, data recovery at the site will start, provided the landowners concur. If the landowners do not concur, the NOD-COE will have met its obligations under Section 106 and 110f of the National Historic Preservation Act.
- c. Institute partial data recovery for Fort Jackson. Partial data recovery will include formal testing in direct impact zones. Testing will be conducted using standard archeological procedures and in accordance with the methodology specified and questions posed in the research design. Other partial data recovery techniques, e.g., mapping, engineering, or architectural diagrams, and so forth, may be required depending on the types of features located within the impact area. Partial data recovery is specifically designed to answer the questions posed in the research design.
- d. Evaluate all information recovered from partial data recovery phase.
- e. Write a professional report on the partial data recovery phase that includes a determination of whether the partial data recovery constitutes adequate data recovery at the fort-site. If adequate data has been recovered, then no further work is required and the partial data recovery will constitute adequate mitigation.

- f. Consultation with the SHPO will indicate concurrence or nonconcurrence with the NOD-COE's decisions concerning the adequacy of Phase I mitigation and the requirement, if any, for Phase II mitigation.
- g. If the SHPO concurs that Phase I efforts constitute adequate mitigation, the agency official may issue authorization to proceed and the ACHP will be notified.
- h. If the SHPO does not concur with Phase I determinations or Phase II recommendations, procedures specified in 36CFR800 will be used to obtain the comments of the ACHP.

Phase II

- a. Refine the research design in light of information obtained in Phase I to address the research questions to be considered during Phase II.
- b. Continue work on only those zones within direct impact areas that need additional work.
- c. Complete work and write a professional report.
- d. Seek SHPO concurrence that the completion of Phase II constitutes adequate mitigation for the research questions considered during Phase II.
- e. For all areas where the SHPO does not concur, procedures specified in 36CFR800 will be followed to obtain the comments of the ACHP.
- f. For all areas where SHPO and ACHP concur or 36CFR800 procedures are complete, the agency official may issue authorization to proceed.

With the completion of Phase I and Phase II requirements, including SHPO and ACHP consultations, mitigation, criteria of effect and adverse effect application, impact assessment, and research design, the work will be concluded and the NOD-COE will have met its obligations.

PROJECT RESEARCH DESIGN

Taking what is presently known about archeological method and theory, the present research design is both site specific and general. Goodyear et al. (1978) provide a realistic glimpse of the research design dilemma in contemporary archeology. The most critical needs in current research programs are varieties of research designs that enable investigators to work from the onset in a problem-oriented manner and within a number of diverse contexts. At this point there seems to be two basic strategies evolving in CRM for design development. The most common approach is to develop problems, hypotheses, and relevant methods specific to a project as it goes through its various stages. A second, but less common strategy, is the formulation of broad, standing research designs that may be created independently of any one project (Goodyear et al. 1978:162).

The research design presented below combines aspects of both approaches. Problems, hypotheses, and methodologies are oriented to answering research questions concerning the specific site and the region.

Fort Jackson is an historic site. Historical archeology, like the rest of archeology, emphasizes problem-oriented and explanatory paradigms rather than particularistic studies. Stanley South, a leading practitioner of the new method and theory in historical archeology, introduced the concept of pattern-recognition (South 1977). Rather than focus on only the description of artifacts (from objects to settlements), South's approach is one where patterning of the archeological record is used to interpret cultural similarities and differences.

Historical archeologists can use documents about the past to complement what is found during excavations. This allows for very detailed hypotheses to be created and tested during archeological projects. The crucial factor to consider here is that it is extremely important to quantitatively analyze the historic intra- and inter-site patterns. Methods for doing this have been published in many places (cf. South 1977; Deagan 1982; Schuyler 1977; Deetz 1965).

Due to the lack of comprehensive archeological and historical syntheses of information on Fort Jackson, it will first be necessary to define the site's internal developmental patterns through time. This data may then be used to locate and define patterns and features that exist at the locale(s), their relative significance in terms of the overall site, and their proximity to the proposed impact areas.

PRACTICAL AND THEORETICAL SIGNIFICANCE

Efficient and effective mitigation programs require certain kinds of information at specific points in time. In a larger context, potential points of theoretical significance for the site type under mitigation are defined from the start and the most appropriate field methods used. At the site-specific level the proposed investigation will address research questions concerning the various occupational episodes at the site not documented in the historical record. At the regional and national level, valuable comparative data will be generated for use in broad scale anthropological and historical comparisons with similar sites.

Two benefits will occur at a practical level. First, this research will generate a large database on the archeological and historical characteristics of the site. At present, no synthetic body of data exists that adequately documents the Fort over time in both archeological and historical contexts. These data will be of use to several professional communities including historians, preservation planners, archeologists, and cultural resource managers. The second practical benefit will be incurred during fieldwork.

Fieldwork at the site will serve as a test vehicle for feature and structure location. The utility (or lack thereof) of the methodologies followed at Fort Jackson will help refine locational techniques in the future at this and other environmentally similar locations. These methodologies may refine research techniques during Phase II mitigation, if such is required.

To conduct the proposed mitigative activities in an effective manner, an interdisciplinary approach must be focused on a series of fundamental problem domains. The problem domains can, in turn, be separated into a series of research questions that can be evaluated by fieldwork, planning, data gathering, data analyses, and interpretation. The research questions and evaluative methodologies applicable to Fort Jackson are found in Chapter II.

ANTICIPATED GAINS IN CULTURAL RESOURCE KNOWLEDGE

An explicitly stated interdisciplinary research approach to the Phase I mitigation of the site will produce gains in cultural resource knowledge by generating, or at least potentially generating, further substantial research work aimed at testing many hypotheses about cultural processes in the Project Area. Another anticipated gain is the continued refinement of potential research questions that may be addressed at Fort Jackson. By creating a matrix of probable research questions that may or may not be answered from this site, archeologists can better document unique or important information from the site instead of producing potentially redundant or inappropriate information. This approach focuses attention on the fact that testable hypotheses can and should be identified before fieldwork begins.

SIGNIFICANCE OF THE INVESTIGATION

Practical Social Implications

Contemporary cultural resource management is based on legislation, general public awareness, and concern for significant sites and events. This awareness and concern is often translated into scientific terms, but unfortunately, much less often translated into terms readily understood by the public. This is a problem, for it is the public who supports the work to identify, evaluate, and preserve important cultural resources that otherwise would be lost or destroyed. There is, then, a need to identify how the public can gain from the proposed investigations at Fort Jackson.

From the perspective of social importance, it is crucial to recognize that cultural resources are nonrenewable. Once destroyed, the information about the past can never be reconstructed. Fort Jackson is a National Landmark and its importance to national, regional, and state history cannot be understated. Its importance to the peoples of Plaquemines Parish is underscored by the actions of the parish residents who began and continue to support the preservation and restoration of the site through very trying economic times.

Management Significance

A comprehensive, site-oriented research design can be used as a scientific research tool as well as a management tool. Particularly for management concerns, the research design provides a means for cost-effective planning as well as consistent evaluation of on-going activities. The research design also sets standard procedures to be followed and evaluated by professional peers and cultural resource management specialists.

Research designs are a plan of action. Inherent in this is the fact that a well thought out research design is used as a planning document. The research design can identify how cultural resources should be approached during fieldwork and analysis, and what important research questions will be addressed during analysis. Thus, the planning aspects of a research design provide significant information to management concerns because they spell out what should be expected and how the project will be implemented, conducted, and completed. By establishing the procedures for research during the planning stage, an effective method for positive and consistent evaluation is achieved.

Of additional significance to NOD-COE management will be the locational and definitive data on site boundaries and features. These data will help plan and structure future projects within and near Fort Jackson.

SPECIFIC RESEARCH GOALS

Mitigation of adverse impacts of the NOV project to a National Landmark Site (Fort Jackson), through the recovery of information specific to the research goals stated below is the focus of the proposed research. The research design presented herein specifies the research goals to be applied to the site and identifies the methodological procedures used to approach each goal. The following chapters identify the research orientation of the proposed investigations on a site specific basis; the problem areas to be addressed within the scope of each study; the methodological approaches to be employed during fieldwork and analysis; and summaries of report preparation, scheduling, and curation specifications.

II. RESEARCH DESIGN FOR PHASE I MITIGATION OF FORT JACKSON (16PL38) PLAQUEMINES PARISH, LOUISIANA

HISTORICAL BACKGROUND

Fort Jackson is located on the west bank of the Mississippi River at approximately river mile 20. Now owned by the Plaquemines Parish Commission, the Fort is used as a museum (Figures A-2, A-3). Construction of Fort Jackson itself began in the 1820s although earlier forts had also been constructed at this strategic location. Fort Jackson, like earlier forts in this area, was constructed to augment the firepower of Fort St. Philip on the east bank. The purpose of the forts was to protect land upriver from military attack via the mouth of the Mississippi River.

It was during the French Period (A.D. 1700-1763), that Governor Vaudreuil recommended building a battery on the west bank of the Mississippi River at Plaquemines Bend, across from Fort St. Philip. Constructing a battery opposite Fort St. Philip would focus maximum fire power on any invading ships.

This early battery, called Fort Bourbon, was constructed of earth with wooden stake fascines. Very little historical information is available about Fort Bourbon. When the Spanish assumed control of the Fort in 1763, it was badly deteriorated. In the late 1700s, Governor Carondelet ordered that a new *Fort Bourbon* be erected. This Fort, made of mud and lined with boards, was constructed around 1794. The Spanish Fort Bourbon did not last very long. In August 1795, a hurricane destroyed most of the Fort and undermined the point on which the Fort stood, causing it to crumble into the river (Greene 1982:52). Carondelet recognized the strategic importance of the Fort and ordered that it be rebuilt in the same area but at a location less likely to be inundated. The new "Fort Bourbon" was a battery with cannon that could crossfire with the cannon across the river at Fort St. Philip. Carondelet also ordered that a levee be constructed around the Fort as protection against future flooding.

In 1803, the Americans took control of Louisiana. Claiborne, the American governor, noted that the Spanish Fort Bourbon was in poor repair and recommended that a new battery be constructed near it. General Bernard, an American Engineer, recommended that the new fort be built on firm ground some 1,100 yards downstream from the site of the Spanish Fort Bourbon (Greene 1982:103).

In December 1814, General Andrew Jackson ordered that a water battery be constructed across from Fort St. Philip. This battery was to be located opposite Fort St. Philip and several hundred yards above, close to the site of Spanish Fort Bourbon (Greene 1982:78). This battery was to contain five 24-pound cannon (Greene 1982:78). However, construction was never completed on this battery (Greene 1982:126).

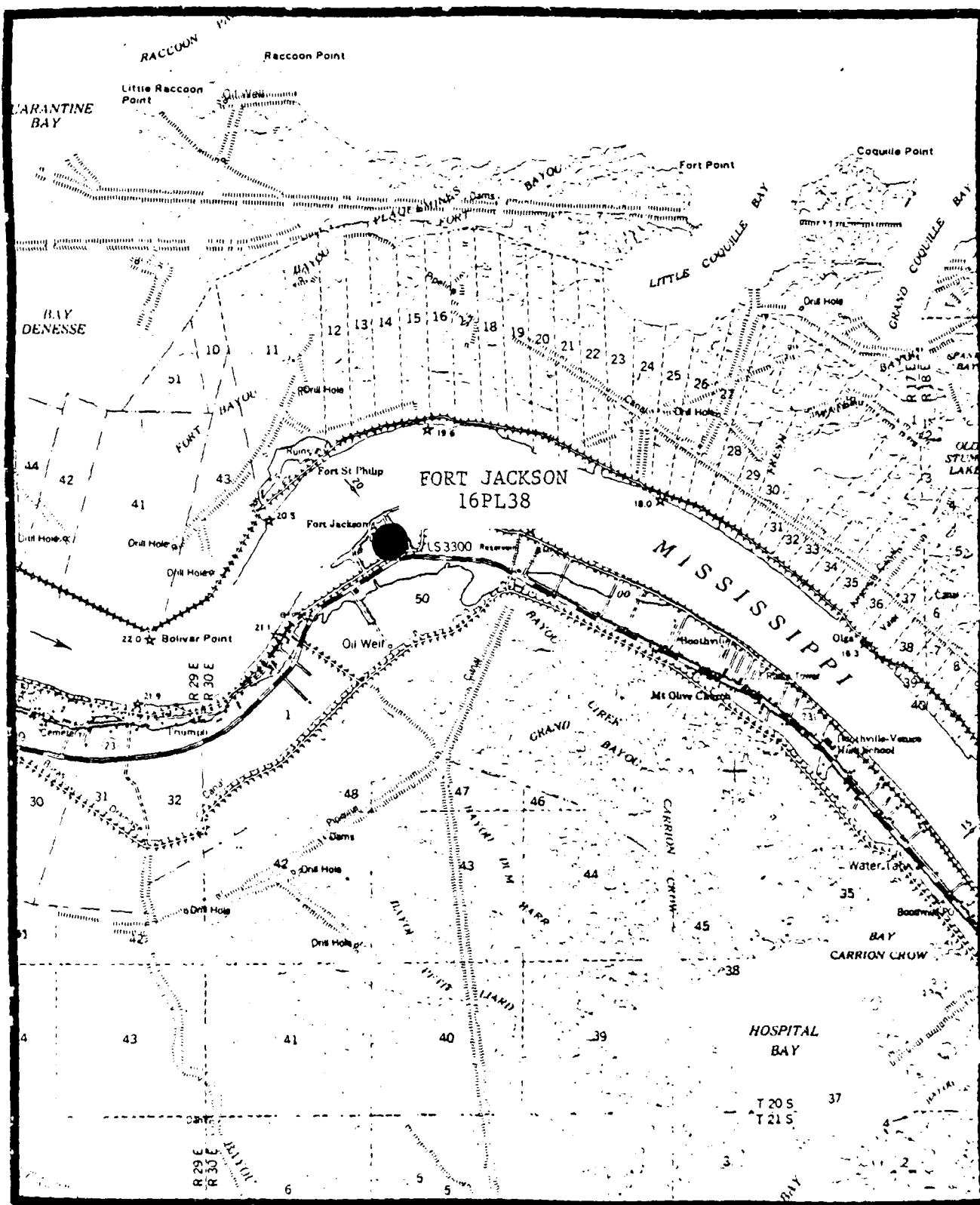
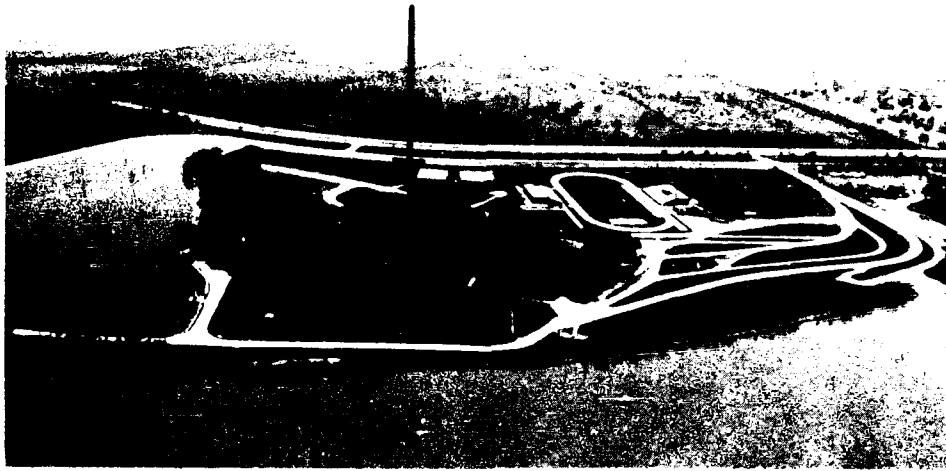
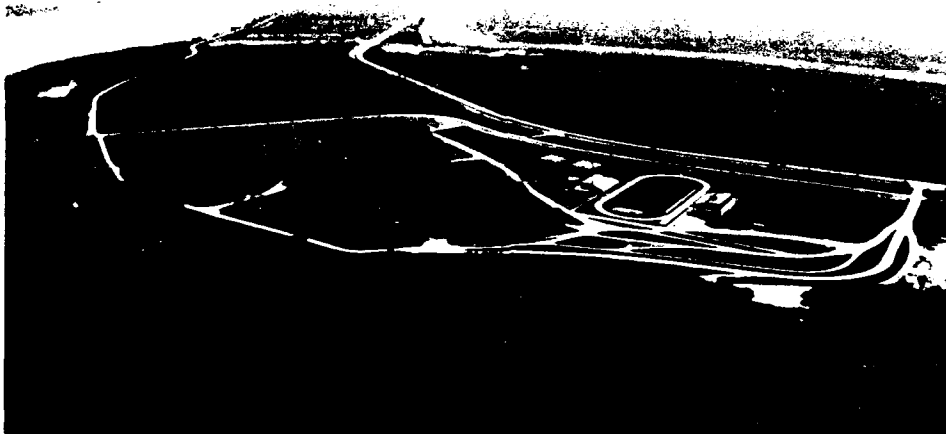


Figure A-2. Location of Fort Jackson (16PL38). USGS Venice Quadrangle, 15 minute series (1979).



a



b

Figure A-3. Aerial photographs of Fort Jackson (16PL38), with Fort Jackson in the center of each photo: a) arrow points to proposed levee expansion area; b) arrow points to existing riverside levee.

In accordance with Congressional authorization to develop a "cordon of defence" of the American Coastline, two reports were submitted concerning the defense of the lower Mississippi and New Orleans. The first was submitted by Captain James Gadsden of the U.S. Army Corps of Engineers and the second was submitted by French military engineer Simon Bernard. Both recommended the construction of a second fort opposite Fort St. Philip at Plaquemines Bend, some sixty-five miles downriver from New Orleans. In early 1822 work began on what was to become Fort Jackson. By 1823, the drawbridge was completed and the paving of the casemates was well advanced. Most of the construction of Fort Jackson was done by 1832, but sporadic work continued into the early 1860s.

Fort Jackson's design conformed to a variation of the French school known as the "modern system" of fortification. This was based on an innovative theory developed by Louis de Cormontaigne, a disciple of Vauban (Robinson 1977:35). Among the elements conforming to this system were: a ditch thirty yards wide at the tip of the bastion; a curved counterscarp, established by swinging an arc from the tip of the bastion; and the straight section of the counterscarp established on a line tangent to this arc and connected to the flanked angle of the crest of the rampart. This last element enfiladed the entire ditch from the flank (Robinson 1977:35).

Essentially Fort Jackson was a pentagonal bastioned work, measuring 130 yards between salients of the bastions. In each of two fronts designed for defense of the river were eight casemates with embrasures providing bombproof enclosures for men and cannon. In the three fronts designed for defense against land siege, the curtains were without casemates for artillery. To defend the water ditch against surprise attack, casemates were also in the flanks of the bastions (Robinson 1977:32). The walls of Fort Jackson were twenty feet thick and the citadel was in the form of a decagon two stories high. Lt. William H. Chase, U.S. Army Corps of Engineers, supervised the early construction of Fort Jackson while P.G.T. Beauregard directed the construction from 1856-1861 (Casey 1983:80).

Living quarters for the slaves and laborers were located north of the Fort. These quarters included a bakery, carpenter's shop, blacksmith's shop, stable, and overseer's house (Greene 1982:128). A hospital was also built outside the north wall of the Fort. The hospital was a raised hip-roofed building with a front porch and five wards (Greene 1982:129). The officers' quarters were located outside the Fort while the quarters for the enlisted men were inside the Fort's citadel (Greene 1982:133).

In January, 1861, under orders of the governor, the Louisiana militia seized both Fort St. Philip and Fort Jackson. The militia constructed an additional "water battery" below Fort Jackson and felled trees around both Fort Jackson and Fort St. Philip. In addition, the construction of a chain link boom across the river between the Forts was recommended by the Fort commander. This was in place by February 1862. By early April 1862, three 10-inch and three 8-inch colombiads and one 42-pound cannon brought from Pensacola were in place at the newly constructed water battery below Fort Jackson. This complemented the 74 cannon already in place in Fort Jackson, 24 of which were in casemates (Pratt 1956:33). Despite this

firepower, critics remained skeptical concerning the Forts' ability to stop modern steamers on dark or stormy nights (Bearss 1961:408).

On March 27, 1862 General Johnson K. Duncan superseded Lt. Colonel E. Higgins in command of Forts Jackson and St. Philip (Squires 1882:521). In early April, 1862, flood waters destroyed the boom across the river. Attempts to repair it unsuccessful because of the high water. The high water also kept between 3 and 18 inches of standing water inside the Forts, making it difficult to keep powder dry.

On April 13, 1862, the first shots were exchanged between Fort Jackson and the massive Union fleet assembling in the river just out of range of the Forts. On April 18, 1862, Union forces opened fire on Fort Jackson with their 13 floating mortar boats. On the first day of the battle, return fire from Fort Jackson disabled one schooner and sunk one mortar boat. Yet General Duncan reported that

generally our shots fall short for lack of elevation and in consequence of the inferiority of our powder compared to that of the enemy. Even our nearest gun a ten inch seacoast mortar could not reach his boats with the heaviest charges" [Duncan 1882:525a].

The Union mortars fired 2,997 rounds in the first day. The citadel and barracks within Fort Jackson were hit so many times that it was impossible to put out the fires. In addition, five parapet and two water battery cannon were disabled and nearly all the casemates were damaged (Pratt 1956:84).

On the second day cannon fire from the Forts was vigorous. Union scout ships that attempted to come up the river and survey the situation were consistently driven off. Commander Porter, in charge of the Union mortar fleet, ordered the mortars to fire constantly day and night with one shell from each schooner every 10 minutes in an attempt to reduce the firepower of the Forts.

On April 22, 1862, the Confederates towed the ironclad C.S.S. *Louisiana* downriver in support of the Forts. Great expectations were raised in the Forts that the *Louisiana* would be able to scatter the Union fleet. Yet lacking effective mobility, the *Louisiana* was moored as a floating battery above Fort St. Philip. General Duncan, who lacked authority over the river fleet constantly urged Captain Mitchell, commander of the *Louisiana*, to bring his ship below the Forts so that the firepower of the ironclad could dislodge the Union mortar flotilla (Duncan 1882:530a). The desperation created by the constant bombardment of Fort Jackson by the Union mortars is evidenced by the frantic pleas of General Duncan to bring the *Louisiana* to the Fort's assistance. On April 24, 1862, at 3:30 AM and immediately prior to the Union fleets attack on the Forts, General Duncan sent a last appeal to Captain Mitchell to move the *Louisiana*:

the enemy are at present taking position on the St. Philip shore to operate against Fort Jackson, they are placing themselves boldly with lights on the

mastheads. You are assuming a fearful responsibility if you do not come at once to our assistance with the *Louisiana* and the fleet. I can say no more [Duncan 1882:540-541].

During the attack, the mortars increased this fire and the Union ships delivered constant broadsides into the Forts. Yet General Duncan reported, "the men stood manfully by their guns, passage was successful because of the dark and smoke, when light came we drove the remaining ships back" (Duncan 1882:528).

Following the battle German troops in Fort Jackson mutinied and spiked their guns. This allegedly occurred as a result of a letter received in the Fort, in which a German soldier's wife asserted that New Orleans had already surrendered and that the Forts and the garrisons therein were to be blown up in defiance of Federal Control (Hyde 1987:58). Many of these troops had been in the Fort for 14 months and had suffered a considerable proportion of the 44 casualties reported in Fort Jackson. Following the mutiny, both Fort Jackson and Fort St. Philip were surrendered to the Union Fort. Union troops occupied both Forts until the end of the war.

After the Confederate surrender of Fort Jackson, the Fort was manned by Black troops of the Union Army. On one occasion the Black troops rebelled against their white officer Lt. Colonel Benedict, for mistreatment. General Banks, military governor after General Butler, sent Ohio troops to reassert control at the Fort. The Ohio troops were stationed at a camp just north of the Fort. Political prisoners of the federal government were also imprisoned at the Fort, including the Mayor of New Orleans (John Monroe) and a New Orleans newspaper editor.

During the remaining years of Civil War the damage to Fort Jackson that occurred during the battle was repaired and several building additions were made, including new officers' quarters, the enlisted men's quarters, and a hospital. The hospital was located outside the Fort on the bank of the river. Part of the parapet over the covered way at Fort Jackson was used as a cemetery during the Civil War. After the war, the dead were removed to the post cemetery at Fort St. Philip. Figure A-4 illustrates the Fort in 1868.

Union troops vacated Fort Jackson in 1871. In the mid 1870s several 15-inch Rodman cannon and 100 pounder Parrot guns were mounted in Fort Jackson to compensate for the weaknesses revealed during the 1862 battle. In addition, several projects to place pliable earth (which was more effective in resisting cannon fire than brittle masonry) around the Fort occurred in the same period. This work was suspended in 1878.

In 1895, the United States Board of Fortifications (Endicott Board) appropriated money for a battery of two 10-inch cannons on disappearing carriages for Fort Jackson. During the Spanish-American War, four massive concrete emplacements for eight-inch breech loading guns on disappearing carriages, in addition several other lighter caliber guns were added at Fort Jackson. During World War I electric light and searchlight plants as well as anti-aircraft batteries were added. (Robinson 1977:62) Herbert Harvey, a New Orleans photographer bought the Fort in 1927 (Greene

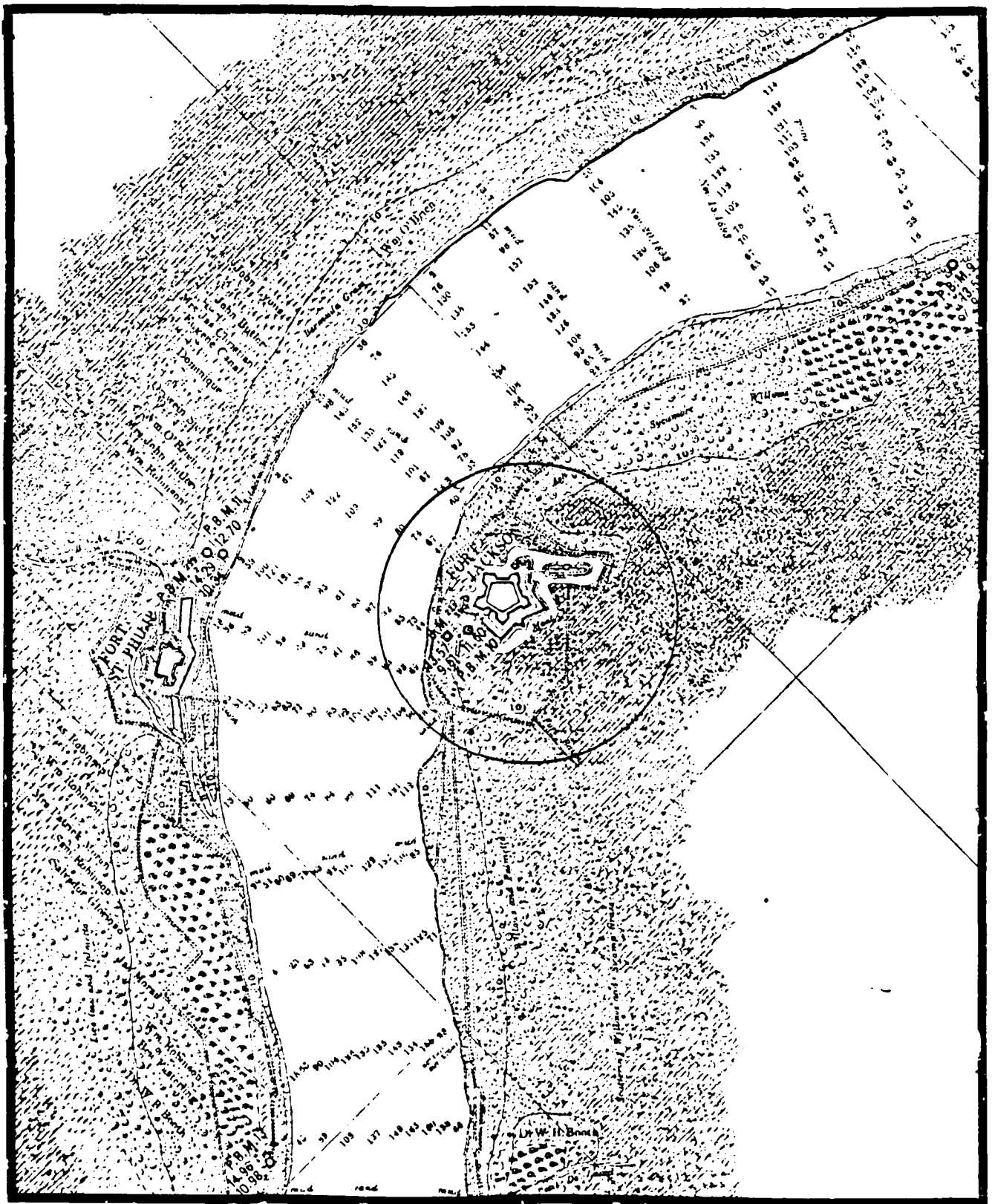


Figure A-4. Excerpt of 1868 Mississippi River Commission map showing location of Fort Jackson (16PL38).

1982:202). In 1960 Harvey donated Fort Jackson to Plaquemines Parish. The Parish renovated Fort Jackson and turned it into a museum, which is its current use.

PREVIOUS ARCHEOLOGICAL INVESTIGATIONS

Two cultural resource surveys have been conducted in the Fort Jackson vicinity. The first was directed by George Castille in 1978 for the Plaquemines Parish Commission Council. The survey area consisted of a corridor surrounding the existing ring levee at the Fort for a proposed levee expansion. Castille recommended that the levee expansion be confined to the batture (river) side of the existing levee to avoid impacts on the scenic and archeological integrity of the Fort (Castille 1978:8). The second survey was conducted for a proposed revetment at the Fort. This survey was directed by David Stuart and Jerome Greene of the National Park Service, under an agreement with the NOD-COE. No cultural resources associated with Fort Jackson were located. Stuart and Greene recommended that the project proceed as planned (Stuart and Greene 1983b:8).

MANAGEMENT HISTORY

A 1973 Memorandum of Agreement for Fort Jackson between the NOD-COE and the Advisory Council on Historic Preservation (ACHP) indicates that the Fort is on the riverside of the existing levees and therefore outside of the project area (Attachment 1). On the basis of the current engineering plans, a direct impact may occur to features associated with the Fort between levee stations 1313 and 1248 if levee enlargement activity is allowed outside the existing ROW (Figure A-5; Appendix D). These features include the construction laborer camp and a Civil War camp of the Ohio Regiment. At present, the locations of these camps are not known.

As stated in the 1973 MOA, avoidance is not a viable alternative for construction at this locale. To mitigate these potential impacts on the property, a research design that results in a 'no adverse effect' determination and is approved by the NOD-COE, the Louisiana SHPO, the ACHP, and the Plaquemines Parish Commission is necessary before construction can proceed between levee stations 1313 and 1248.

DEFINITION OF IMPACTS

Impacts to the site by the proposed construction include direct visual impacts and may include physical impingements created by the lifting and widening of the existing levee (Figure A-5). The visual impact to the rear of the Fort will consist of increased visual isolation caused by an average 3 ft (1 m) lift in this area. Physical impacts will consist of surface disturbances caused by widening and grading the levee. Visual impacts should be considered as no adverse effect for the following reasons. First, the "historical" visual aspect of the Fort has always been towards the river. The proposed construction activity is along the back of the Fort and will not compromise the river view. Secondly, the proposed project consists of raising an existing levee. This levee, constructed in 1961 to protect the Fort has, in effect, already isolated the rear of the Fort.

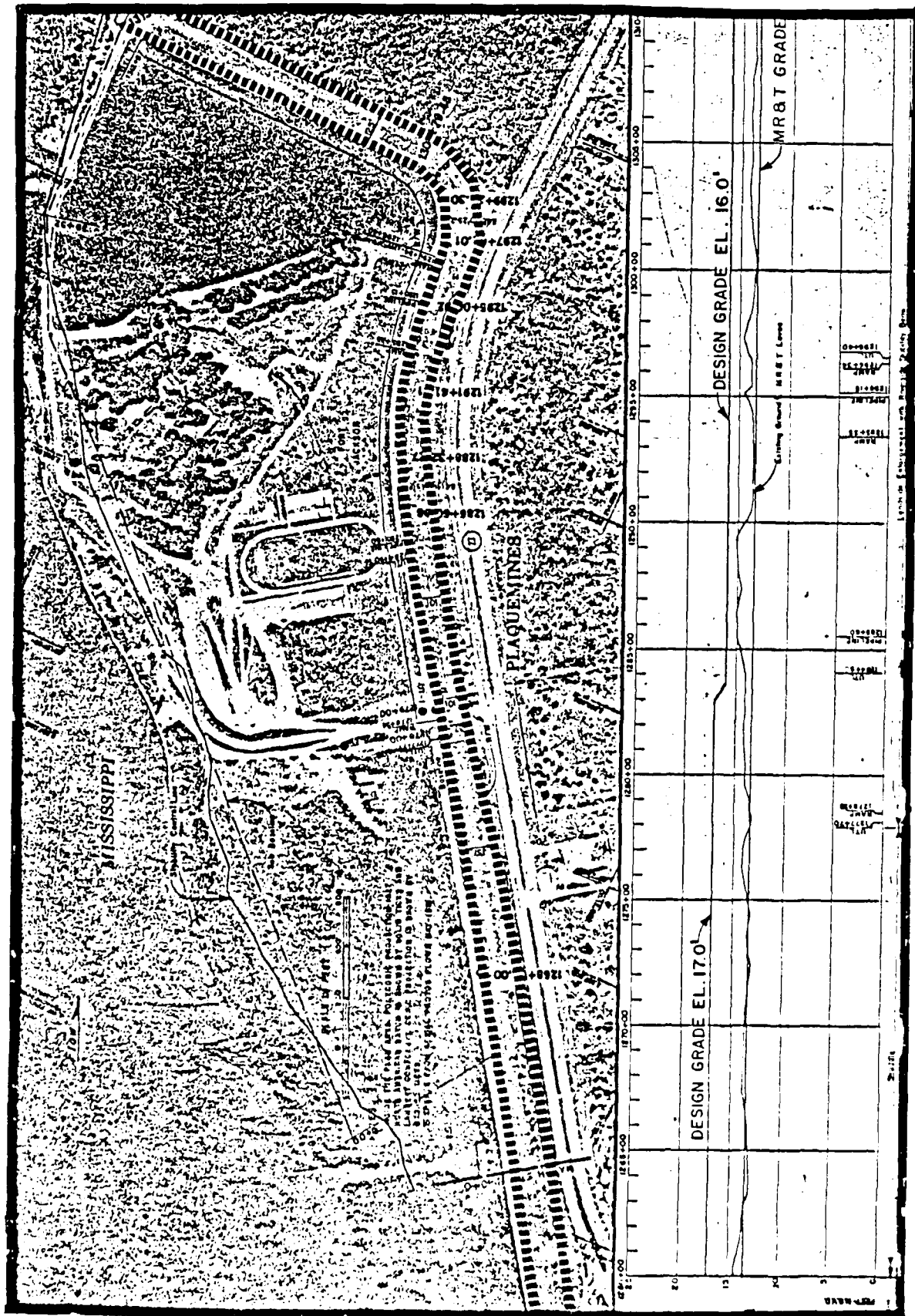


Figure A-5. Engineering plan and profile showing proposed construction corridor at Fort Jackson (16PL38).

The physical impacts are confined to an existing ROW corridor along the back of the existing levee. No work is proposed on the Fort side of the existing levee (Russell Young-Civil Engineer, Levees Section NOD-COE, personnel communication 1987). The corridor averages 130 ft (40 m) in width. Of this, an approximately 30 ft (10 m) wide corridor is within or under the existing levee and work within this corridor should be considered as having no adverse effect on the property. The remaining ca. 100 ft (33 m) wide corridor will be disc plowed to an approximate 1 ft (0.3 m) depth, covered with fill, and graded. An additional impact may occur if this corridor and areas outside the corridor are used for heavy equipment traffic. If the latter activities are unavoidable, then an adverse effect will occur. The following research design is oriented towards mitigation of these adverse effects. It is to be brought into effect, upon approval by the Louisiana SHPO and the ACHP, if NOD-COE management decides that avoidance of this area is not possible.

RESEARCH DESIGN

Statement of Specific Research Goals

Due to the lack of archeological and historical syntheses concerning Fort Jackson it first will be necessary to define the site's internal developmental patterns through time. These data may then be used to locate and define patterns and features that exist at the locale(s), their relative significance in terms of the overall site and region, and their proximity to the proposed impact areas. Once acquired, this data may then be used to assess the significance of site features located within the effected area and provide recommendations for further treatment, if necessary.

The proposed investigations at Fort Jackson will provide information relevant to the research goals discussed below, and in so doing mitigate adverse impacts to the site deriving from the proposed NOD-COE project. Phase I mitigation at Fort Jackson will locate, define, record, and conduct partial data recovery and evaluation of associated Fort features within the ca. 100 ft (31 m) wide direct impact corridor described above. The following features may be located within or peripheral to the impact corridors:

1. The site of the Ohio troop camp was located near Fort Jackson. Portions of this camp may lie within the proposed levee expansion.
2. According to Greene (1982) the laborers who were building Fort Jackson lived in structures just to the north of Fort Jackson. The subsurface remains of these buildings and associated features may still be intact. These areas may lie within the proposed levee expansion.
3. After the Civil War married soldiers were reportedly living around the exterior moat. Remains associated with the soldiers housing may be situated along the proposed levee expansion.

4. Activity areas associated with the construction and /or rebuilding of the Fort (e.g., blacksmith shop, farriers shop, stables) may be situated within the proposed levee expansion.
5. Additional features that may be located within the proposed levee expansion include the remains of military and /or private service structures established during the construction of the Fort. Examples would include general merchandise shops, commissaries, cookhouses, barracks and "bars". Such structures are rarely documented.

SPECIFICATION OF RESEARCH OPERATIONS

As noted above, the location of these and other potential features of the Fort is presently unknown. There is a high probability that some or all of these may be located within, or peripheral to, proposed impact areas. Research operations will locate, define, sample, and evaluate potential archeological remains associated with these features within the projected impact areas. A series of interrelated research operations will be used to accomplish this goal. The results of the operations will then be synthesized into a single document oriented towards addressing the research goals. Figure A-6 illustrates the process of the proposed research at Fort Jackson. The research operations are defined below.

Historical Research

A general historical background is required for the Fort and its relationship to the history of the United States, Louisiana and Plaquemines Parish. Additional detailed information is necessary to develop a historic context at the site-specific level. The approach will follow the general standards for creation of historical contexts in the Secretary of the Interior's Standards and Guidelines (48FR44738). The historical background will establish and document associative historical influences that occurred prior to, during, and immediately after the periods of site occupation. These data will in turn be used to define and address potential historical influences on military settlement in terms of site selection and site organizational processes.

Site Specific Background

There are numerous historical maps depicting Fort Jackson during the American Period (1803 to the present); however, they must be obtained, revised, and synthesized. Additional research must be conducted to determine the location of all features and structures related to the Fort. To accomplish this, map data will be acquired from several sources, including the Fort Jackson Museum, National Archives in Washington, the U.S. Army Archives, the Louisiana National Guard Headquarters (it maintains a collection of maps on Fort St. Philip and Fort Jackson), the Historic New Orleans collection, the NOD-COE Office and the Geoscience map library at Louisiana State University (Baton Rouge). The maps will be acquired before fieldwork begins. From these maps, a series of single-scale overlay "templates" will be made and used to guide field investigations. Additionally, sources such as the United States Census

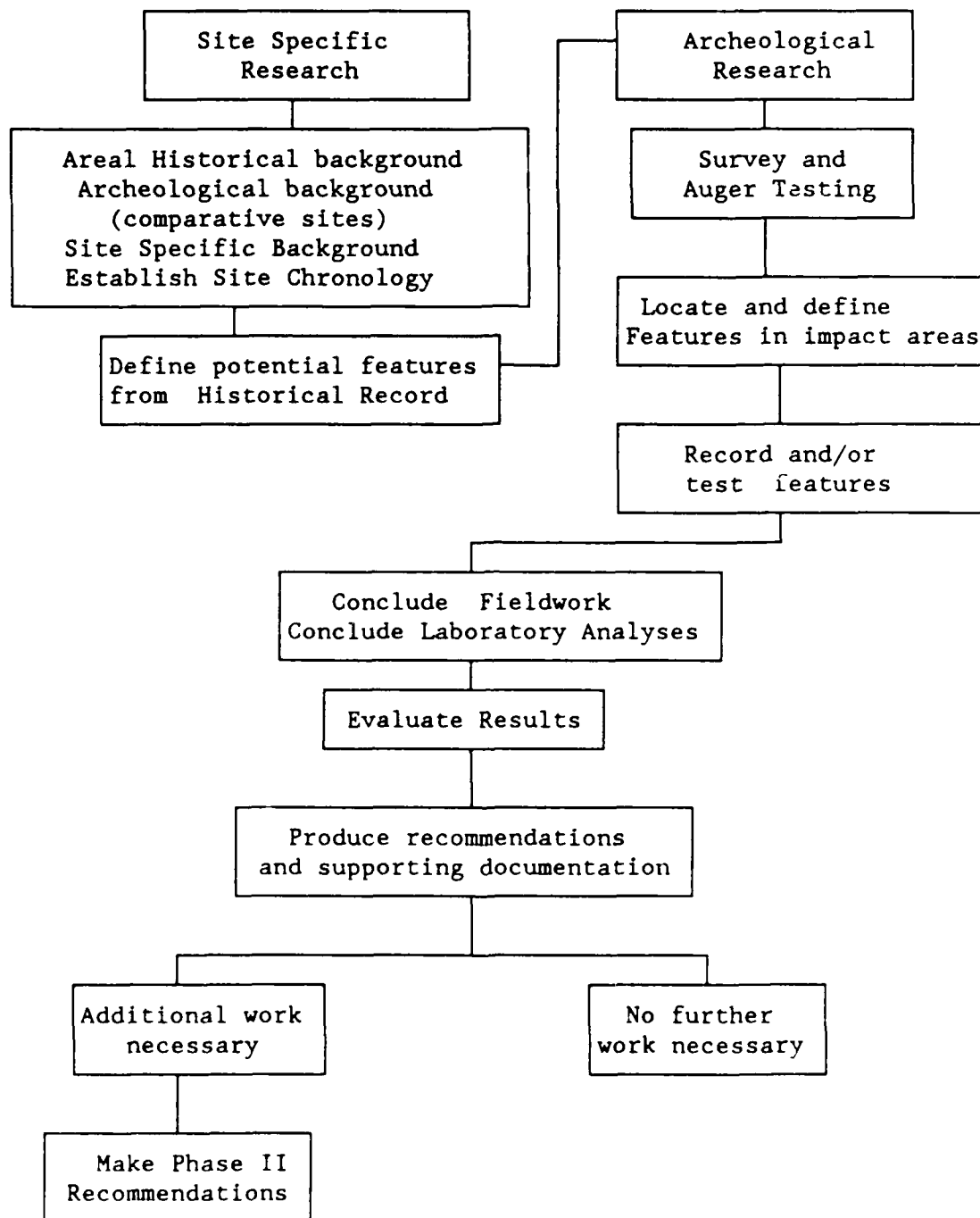


Figure A-6. Flow chart of process applied to Phase I mitigation of Fort Jackson.

and military rolls will be reviewed to provide information on the soldiers, civilian workers, and their families who lived at the site during the period(s) of construction and occupation.

Archeological Background

A search will be conducted of historical, anthropological, and archeological literature to generate comparative information on various studies of military sites from different time periods and areas. For example, military fortifications constructed by the French during a given time period are expected to follow a general pattern, with some differences due to local environmental and political conditions. Correlating of data about other American forts constructed during similar time periods may indicate the probable location of Fort features not illustrated on maps of Fort Jackson. Comparisons will be made with other regional forts, including Fort St. Leon, Fort St. Philip, Fort St. Mary, Los Adias, and Fort St. John. These data will be applied to the interpretation of the Fort organization in general as well as used to locate additional high probability areas for features and activity areas within the impact zones.

Archeological Aspect

Fieldwork at the site will begin only after the preceding background data has been acquired. For maximum efficiency, fieldwork should be conducted during the low water period (August-December) for this section of the Mississippi River. Field methodologies oriented towards addressing the research goals will be concerned with locating, identifying, delineating, and recording structures, features and activity areas within the defined impact zones. The field location and verification of fort-related cultural features is the most important facet of the proposed research. A series of procedural steps are necessary to accomplish this goal. These are listed as follows.

Photogrammetry/Aerial Photography. A series of maps and aerial photographs will be examined. Maps will include historical maps of the Fort as discussed above as well as Mississippi River Commission survey maps and early land ownership plats made before and during the period of site occupation. All available and appropriate aerial photographs will also be examined. These will include NOD-COE air photographs dating to the 1930s on file at the NOD-COE engineering file room, recent NASA false-imagery photographs, and photographs taken on reconnaissance flights of the project area. From these data, a series of single-scale overlays will be produced and used to define site evolution during its periods of occupation, post occupational disturbances that may influence archeological interpretations, and to assist in rapid field location and verification of prominent site structures and features.

Site Survey: Pedestrian, Auger Testing and Test Excavation. Following the acquisition of the preceding data, a pedestrian survey and auger testing of the impact corridor, as defined above, will be conducted to locate and define any surface and/or subsurface isolated artifacts, features, and structural remains. Pedestrian survey will be conducted in flagged transects at 6 ft (2 m) intervals. The survey will be conducted within the defined impact corridor and may extend beyond these areas, if the background data has defined a potential for any features peripheral to these areas that may be affected by the proposed construction.

Because of severe soil disturbance from the existing levee, the use of remote sensing instruments and techniques (e.g., magnetometer, soil chemistry, resistivity) is not considered useful for feature location. Instead, the historical maps and information, pedestrian survey, and systematic auger testing are judged as the most likely and expedient techniques to locate potential archeological features.

Auger tests will be taken at 10 m intervals across the impact areas and at locations of potential features identified on the historical maps. The tests will be conducted with a 12-inch power auger to depths exceeding the projected total depth of impact and not less than 3 ft (1 m). The depth of each auger test will be dictated by the micro-stratigraphy recorded at the preceding test. In areas of recent flood deposits, the test may exceed 3 ft (1 m); conversely, in deflated or previously disturbed areas, the test will stop at 3 ft (1 m) or when culturally sterile sediments are reached. If buried structural remains are encountered during a test, augering will cease and a controlled 1 x 2 meter unit will be excavated at the location. All tests will be backfilled immediately upon completion. These tests serve two purposes: 1) to locate and potentially define subsurface features; and 2) to locate any non-feature activity areas as defined by artifact density within the impact zone.

If the fieldwork activities do not detect any features, structures, activity areas, or significant subsurface anomalies possibly associated with the Fort, then all fieldwork, with the exception of mapping (see below), will cease. A report on the results of the survey will then be prepared for the NOD-COE.

Site Mapping. A detailed site map incorporating topography, vegetation, surface features, isolated artifacts, and impact areas will be prepared after pedestrian survey (see above). This map will be compared to, and integrated with, the overlays produced during historical research. The map will be constantly updated during subsequent fieldwork. The site will be mapped with an EDM or a transit. Site control will be established by placing a permanent datum at the southwest site perimeter away from the impact area. A 10 meter interval site grid for control will be established. The grid will be oriented to true north and referenced to the primary datum. The primary datum and grid will be referenced to USGS UTM grid coordinates from available USGS benchmarks at the site. Vertical control will be maintained through daily backsites to USGS benchmarks. Secondary datums may be established (as needed) at various points within the site for reference. All elevation points for mapping, artifacts, features, etc., will be taken with either a transit or an EDM.

Site Excavation and Recordation. Following the surveying, mapping, and locating of potential subsurface features, the next step will consist of recording located surface features and structural remains, and locating, defining, and sampling subsurface features. A set of standardized forms will be used to record these features at the site. The format of these will be mutually agreed upon by the NOD-COE and the contractor before fieldwork begins. These forms will include, but not be limited to, isolated finds, features, structures, excavation units,

excavation level, photographic, field notes, special samples (e.g., botanical, soil), and soil and feature profile forms. Measurements of historic features and structures will be taken in metric and English standard systems. For rapid assimilation of site information, these data will be input into the Cultural Resources Information System (CRIS), an archeological database system developed by the NOD-COE Experimental Research Laboratory (CERL) and currently used by the NOD-COE. The fields will be in a format mutually determined by the contractor and the NOD-COE.

Excavations will be oriented towards the definition and sampling of site surface features and testing and sampling of defined subsurface anomalies. Excavation of a site feature will consist of obtaining samples of material refuse within or surrounding the feature. The size of these samples will be judgementally derived and oriented towards obtaining sufficient data for functional identification and evaluation of the feature or structure. In the case of a privy or dump, the feature may be excavated in halves or quartered. If the feature consists of the structural remains of a habitation, or similar feature, then sampling of sheet refuse around or within the structure may be conducted. In all cases excavations will cease when either a 50% sample of fill or a sufficient sample for identification and interpretation has been obtained. Feature excavation will be oriented towards identification of the feature form and function. Excavation units will not exceed 1 x 2 meters square and excavation levels will not exceed 10 cm in depth. When appropriate, units will be excavated in contoured, arbitrary, 10 cm levels.

All excavations will be conducted in a traditional archeological manner using hand tools (shovels, trowels, etc.). All excavated fill will be screened using 1/4-in or less mesh hardware cloth. A four liter flotation sample will be taken from selected feature levels and control unit to sample fine-fraction remains at the site. Since natural strata are often difficult to discern in this environment, they may not be useful in separating potential cultural components.

If well-defined natural or cultural stratigraphic units are found during excavation, continuing work will be conducted within these levels. Stratigraphic profiles of representative walls of each excavation unit will be drawn, unless the project archeologist determines that the strata are sufficiently similar to justify drawing fewer profiles. All profiles will be drawn on metric graph paper. Profiles will be described following the style of the *Soil Survey Manual* (U.S. Dept. of Agriculture 1975).

If a subsurface feature is located through auger testing, additional tests will consist of the placement of a single 1 x 2 meter control unit within the anomaly center. The unit will be excavated in arbitrary 10 cm levels to sterile deposits, or until the feature is located and/or functionally defined. If sufficient information is recovered during testing to ascertain the feature's function, then no further excavations will be conducted. If additional data is needed, then data from the control block will be used to guide overburden removal in additional units and recover feature information. Once the feature is functionally and spatially defined, testing/excavation will cease.

Field Photography. Duplicate black and white negatives and color slide photographs will be taken of: 1) the site before, during, and after data recovery operations; 2) all site features and structures; 3) test units and test unit profiles; and 4) daily operations. Black and white negatives and contact sheets will be subjected to an archival quality wash. The photographs will be organized in a log, which will contain the appropriate photographic documentation form.

Laboratory Analyses. In establishing the format for the laboratory analysis, an initial but far-reaching goal is to create a single analytical system that can approach the stated research objectives in a quantifiable manner. In so doing, the analysis must be adapted to the specific site type rather than any "formally" recognized system. Such an approach based on known historical activities at the locale provides a more anthropologically-oriented picture of the site occupation. In order to obtain daily feedback between field operations and analytical results, both field and laboratory analyses will be conducted concurrently.

Two analytical methodologies, descriptive and functional, will guide the analysis of artifacts recovered from Fort Jackson. A combination of these two analytic techniques will provide a more thorough interpretation of the site than would either a solely descriptive or functional system. Descriptive analysis will create data relevant to the "history of the artifact", that is, its place of origin, manufacturing technology, and dates of manufacture. Data derived from descriptive analysis will help evaluate artifact and feature chronology. For example, artifacts associated with the various occupational episodes of Fort Jackson may be used to chronologically associate features or structures in lieu of other historical evidence.

The second level of analysis will consist of functional identification of artifacts and features. Artifacts will be examined using a functional typology similar to that used by Sprague (1981), Adams (1980), and Castille et al. (1985). Such a typology will allow the functional identification of features and cultural activity areas. Functional groupings will be derived from a synthesis of historical data on this site type. These data will be used to generate a listing of "expected" site features and activity areas during the Fort occupations and the cultural assemblage (structures, features and artifacts) that could be associated with the site.

Analytical Procedures. Field identification and curation of artifacts will be based on a code system. Code 1 will refer to artifacts found in-situ. Code 2 artifacts denote those items found within a quadrant or level of an excavation unit or feature. Code 3 artifacts are those recovered from screening. Code 4 refers to general surface finds at mapped locations. All recoveries will be referenced to the site grid.

Laboratory Forms and Recordation. A set of forms for use in laboratory analysis will be prepared before fieldwork begins. These forms will be designed by the contractor in consultation with the NOD-COE. Due to an anticipated recovery of numerous materials, all recovery data will be input into CRIS for rapid analyses. The database "field" selection for this database will also be designed by the contractor in consultation with the NOD-COE.

Faunal Analyses. Faunal remains may help define activity areas at the Fort. Additional ancillary data may be obtained through the acquisition of faunal remains in association with features dating to the various Fort occupations. A concerted effort will be made to obtain a large sample of faunal materials. In addition, 2 liter flotation samples will be collected from each site feature and analyzed for ethnobotanical remains too small to be recovered in the screens (e.g., riparian and avifauna). If possible, faunal remains will be examined in terms of species and element, age of individuals, minimum number of individuals, indications of unique butchering patterns, and patterns of habitat exploitation (seasonality). Faunal recoveries will be size graded (25 mm, 13 mm, 6 mm, and 3 mm). This analysis is contingent on the recovery of a substantial, well-preserved, and diversified sample.

Curation. Upon completion of the project all artifacts recovered will be curated at a location agreed upon by the Plaquemines Parish Commission and the NOD-COE. Packaging and cataloging procedures will follow the guidelines for curation established by the curatorial facility. Upon acceptance of the final project report, all photographs, field notes, field forms, and computer data generated during the course of this project will be delivered to the NOD-COE, in a mutually agreed upon format.

Report Preparation. This mitigation report will be combined into a single document that will be appended to the *Final Report of Cultural Resource Investigations Within U.S. Army Corps of Engineers New Orleans to Venice Hurricane Protection Project*. Copies of the report will be provided to the Fort Jackson Museum and the Plaquemines Parish Commission. This report will follow the NOD-COE reporting requirements guidelines for cultural resource investigations (see Appendix A). The report will include an evaluation of the data recovery at the Fort and, if necessary, recommendations for Phase 2 data recovery.

III. PROJECT SCHEDULE AND DELIVERY REQUIREMENTS

PERSONNEL

All personnel assigned to this project will be informed of the total scope of the project, the exact work to be performed, the specifications and format to be followed, and the specific responsibilities of each participant. All laboratories and consultants used on this project will also conform to the relevant federal requirements. All consultants will be approved by the NOD-COE. Personnel in supervisory and consultant positions must demonstrate the qualifications that satisfy or exceed the requirements specified in 36CFR66, Appendix C and the Secretary of the Interior's Standards and Guidelines (Federal Register 48FR44738). The project archeologist will meet or exceed the requirements for historical archeologists.

TIMETABLE

The tasks discussed within this proposal will be conducted within the following time frame. The starting date for fieldwork will be determined by the NOD-COE. Field and laboratory work is scheduled to be conducted over an eight week period upon notification to proceed by the NOD-COE. Two months (8 weeks) are scheduled for the completion of a draft final Phase I Report. The report will incorporate the results of historical research, field and laboratory analyses of data recovered from Fort Jackson. If additional Phase II work is determined necessary, then recommendations will be made in Phase I for the completion of compliance work at the locations. If no additional work is deemed necessary, then the report will contain adequate information and justifications for these recommendations. The NOD-COE will evaluate the draft final and provide review comments to the contractor within one month (4 weeks) after submittal. All revisions will be made within one month after receipt of review comments.

REPORT PREPARATION

The reporting standards will follow the guidelines established for cultural resource investigations in Appendix A of the *Final Report of Cultural Resource Investigations Within the U.S. Army Corps of Engineers New Orleans to Venice Hurricane Protection Project*. Six copies of the draft report will be submitted to the NOD-COE for review. Upon review and approval of the draft final, forty final copies and a reproducible master copy will be submitted to the NOD-COE.

ATTACHMENT 1

MOA

STATE OF LOUISIANA

Department of Art, Historical and Cultural Preservation

OLD STATE CAPITOL, BATON ROUGE, LOUISIANA 70801
(504) 389-5086

July 24, 1973

EDWIN EDWARDS
CHIEF

JAY R. BROUSSARD
DIRECTOR

MRS. PEGGY RICHARDS
ASSISTANT DIRECTOR

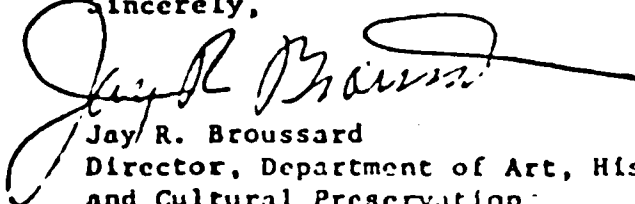
Colonel Richard L. Hunt
District Engineer
New Orleans District
Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160

Dear Colonel Hunt:

Raising the height of the levee at Fort St. Philip will lead to increased isolation from the fort's natural environment (the Mississippi River) and the further introduction of a visual element (the levee) out of character with its original setting..

However, if raising the levee is indeed necessary for hurricane protection, then it should be accomplished on the outside of the existing levee and without using the Fort St. Philip site for a borrow pit. As you mentioned, maximum upkeep of the resultant levee must be carried out.

Sincerely,



Jay R. Broussard
Director, Department of Art, Historical
and Cultural Preservation
State Historic Preservation Officer

JB/bc

**ADVISORY COUNCIL
ON
HISTORIC PRESERVATION**

WASHINGTON, D.C. 20540

October 3, 1973

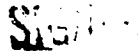
Richard L. Hunt
Colonel, CE
District Engineer, New Orleans District
Department of the Army
P.O. Box 60267
New Orleans, Louisiana 70160

Dear Colonel Hunt:

The Advisory Council is pleased to inform you that the Memorandum of Agreement for the Fort St. Phillip National Historic Landmark in Louisiana has been approved by the Chairman of the Advisory Council. This completes the Section 106 process and the Corps of Engineers may proceed with the proposed construction of the New Orleans to Venice, Louisiana hurricane protection project pursuant to P.L. 874, 87 Congress, 2nd Session, approved 23 October 1962.

The Council appreciates your cooperation in the resolution of this matter and commends your contribution to the preservation of our national heritage.

Sincerely yours,



Ken Tapman
Director, Office of Compliance

Enclosure

**ADVISORY COUNCIL
ON
HISTORIC PRESERVATION**

WASHINGTON, D.C. 20240

MEMORANDUM OF AGREEMENT

WHEREAS, the New Orleans District, Corps of Engineers, Department of the Army, proposes to construct the New Orleans to Venice, Louisiana hurricane protection project pursuant to Public Law 874, 87 Congress, 2nd Session, approved 23 October 1962; and,

WHEREAS, the New Orleans District, Corps of Engineers, Department of the Army, has determined that this proposal will affect Fort St. Phillip National Historic Landmark, a National Register property, and pursuant to the National Historic Preservation Act of 1966 has requested the comments of the Advisory Council on Historic Preservation; and,

WHEREAS, pursuant to the procedures of the Advisory Council on Historic Preservation (Federal Register, November 14, 1972, pp. 24146-24148) representatives of the Advisory Council on Historic Preservation, the Corps of Engineers, and the Louisiana Historic Preservation Officer have consulted and reviewed the undertaking to determine the nature of the effect; now,

THEREFORE:

It is mutually agreed that implementation of the undertaking as indicated in the attached letter of August 16, 1973 from Colonel Richard L. Hunt, New Orleans District Engineer, Corps of Engineers, Department of the Army, which contains specific conditions to insure preservation of the historic integrity of the property, will not have an adverse effect.

Robert R. Sawyer 9/6/73 (date)
Executive Secretary
Advisory Council on Historic Preservation

Richard L. Hunt 17 Sep 73 (date)
Corps of Engineers
Department of the Army

Jeff R. Burch 9/14/73 (date)
Louisiana Historic Preservation Officer

CH SL 1 (date)
Chairman, Advisory Council on
Historic Preservation



DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P. O. BOX 60267
NEW ORLEANS, LOUISIANA 70160

ADVISORY COUNCIL ON
HISTORIC PRESERVATION

AUG 20 10 26 AM '73

AUG 22 1973

IN REPLY REFER TO
LMNPL-RE

16 August 1973

Mr. Ken Tapman, Compliance Officer
Advisory Council on Historic Preservation
Suite 430
1522 K Street, N.W.
Washington, DC 20005

ADVISORY COUNCIL ON
HISTORIC PRESERVATION
OCT 1 10 48 AM '73

Dear Mr. Tapman:

Reference is made to your undated letter which refers to your previous letters of 10 January and 17 May 1973, relative to the New Orleans to Venice, Louisiana, hurricane protection project and its relationship to Fort Jackson and Fort St. Philip, national historic landmarks. Reference is also made to recent telephone conversation between your Mr. Wall and Messrs. King and Chatry of my staff.

The Fort Jackson site is on the riverside of the existing levees which will be raised. It is outside of the project area, and will not be affected by the construction.

At Fort St. Philip the existing levee between the river and the fort will be enlarged. This enlarged levee is intended to minimize the effect of hurricane-driven surges from the east affecting the area on the west bank. Fort St. Philip is proximate to the levee-raising construction. Because of this, there will be an effect from a visual basis in that the higher and broader levee will alter the view from the fort to the river and vice versa. While the levee will have a visual effect, it has been located as far riverward as is engineeringly feasible so as to avoid any physical infringement on fort features.

In accordance with prescribed coordination procedures, we wrote to the State Liaison Officer for Louisiana on 11 July 1973 informing him of our determination that Fort St. Philip would be affected. A copy of our letter to the State Liaison Officer and his response are inclosed. In his response the State Liaison Officer indicates that the visual

LMNPL-RE
Mr. Ken Tapman

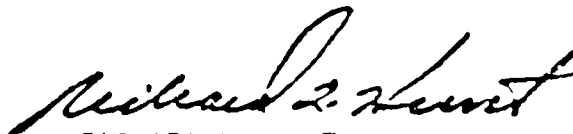
16 August 1973

alteration involved is acceptable, provided measures are taken to adequately maintain the levee. Adequate safeguards to protect the site during the construction process will be written into the construction contracts, and adequate inspection will be maintained by the Corps of Engineers during this construction. After construction, the levee will be maintained on a continuing basis with the grass being well trimmed, all brush and undergrowth cut down, and trash removed. Furthermore, the levee will serve to protect Fort Jackson across the river from heavy hurricane surges from the east. This fort is kept in a good state of preservation, is open to the public, and is used as a cultural center by the parish for fairs and the like.

With respect to the middens which were mentioned in the draft statement as being of doubtful value, a literature search of this area was made by a professional archeologist and no middens could be found. A literature search was also made by an engineer experienced in historical studies to verify this. The middens mentioned had been reported by field engineers as possible sites, not actual sites, with the opinion that because they were worked over and washed out in previous floods, they would be of doubtful value. None of these possible sites are located in the path of construction and all are within the area that the project will protect. We agree that the dismissal of these sites, in the draft statement, without an expert evaluation, was inappropriate. Accordingly, we plan to delete the reference in the final statement. During the construction process, if any unknown middens or mounds are uncovered, the inspectors will report them and appropriate measures will be taken.

We believe that the foregoing is responsive to the concerns expressed in your letters. We request that, based upon the information presented herein, a Memorandum of Agreement with respect to Fort St. Philip be prepared by your office.

Sincerely yours,



RICHARD L. HUNT
Colonel, CE
District Engineer

- 2 Incl
1. Cy of ltr dtd 11 Jul 73
w/incl
2. Cy of ltr dtd 24 Jul 73

IN REPLY REFER TO
UNPL-RE

16
9 July 1973

State Liaison Officer
Director
Louisiana State Department of Art,
Historical, and Cultural Preservation
Old State Capitol Building
Baton Rouge, Louisiana 70801

Dear Sir:

The project "New Orleans to Venice, Louisiana," now under construction, provides for hurricane protection works for various delta lands along the Mississippi River below New Orleans. A draft environmental statement was prepared for the project and furnished your office for review on 3 October 1972. We are now in the process of completing the final statement.

It has been determined that one feature of the project will have an effect on a property included in the National Register of Historic Places - Fort St. Philip. The effect would result from enlargement of an existing levee located on the bank of the Mississippi River fronting the fort.

As part of the consultation process in projects which might affect historical sites, I would like to have an expression of your views relative to this levee enlargement. Essentially, the enlargement will involve an increase in the levee cross section and raising the crown from about 10 feet above mean sea level (m.s.l.) to about 16 feet above m.s.l. This will affect the esthetic view to some extent, and we are asking for your opinion concerning the effect of this construction. Inclosed is a set of annotated drawings showing this construction plus an aerial view of the fort.

There are no practicable alternatives to the alignment of the levee. Any location to the rear would involve exorbitant cost and excessive

LMPL-RE
State Liaison Officer

16 July 1973

construction periods, since such locations would involve construction on extremely poor foundations. It would, moreover, result in destruction of valuable estuarine marsh, and in this regard would have serious implications insofar as estuarine productivity is concerned. Most importantly, a rearward location would subject the fort itself to total and prolonged flooding under certain types of storms, with the attendant possibility of damage and deterioration.

KNIGHT
LMPL-

We consider that the alteration of the view from the fort to the river and vice versa, occasioned by the higher levee elevation, would represent a minor impact on the esthetics. The levee will be sodded and proper maintenance procedures will be required, including periodic dressing, mowing, and resodding as required. If there are any questions concerning this matter, I would be happy to discuss them with you.

SHELL
LMPL-

CHATRY
LMPL

At the present time we are holding the final environmental statement on this project, ~~for this opinion and will~~ *much* appreciate a prompt response.

BAHR
LMED

Sincerely yours,

KING
LMIDE-E

RICHARD L. HUNT
Colonel, CE
District Engineer

Exec Ofc

2 Incl
1. Drawings
2. Photos

Copy furnished: (w/o Incl)
Mr. Lou Wall
Advisory Council on Historical Preservation
Post Office Box 26552
Belvira Station
Denver, Colorado 80226

Environmental Officer



**US Army Corps
of Engineers**

New Orleans District

Cultural Resources Series

Report Number: COELMP/PD-87-04

**FINAL REPORT OF CULTURAL RESOURCE INVESTIGATIONS
WITHIN THE U.S. ARMY CORPS OF ENGINEERS NEW ORLEANS TO VENICE
HURRICANE PROTECTION PROJECT**

**ANNEX B: RESEARCH DESIGN FOR PHASE 1 MITIGATION
OF FORT ST. PHILIP, 16PL39, PLAQUEMINES PARISH, LOUISIANA**

**Final Report
December 1988**

**Agency for Conservation Archaeology
Eastern New Mexico University
Portales, New Mexico**

**Prepared for
U.S. Army Corps of Engineers
New Orleans District
P.O. Box 60267
New Orleans, LA 70160-0267**

Distribution Unlimited

**FINAL REPORT OF CULTURAL RESOURCE INVESTIGATIONS
WITHIN THE U.S. ARMY CORPS OF ENGINEERS NEW ORLEANS TO VENICE
HURRICANE PROTECTION PROJECT**

**ANNEX B: RESEARCH DESIGN FOR PHASE I MITIGATION
OF FORT ST. PHILIP, 16PL39,
PLAQUEMINES PARISH, LOUISIANA**

By

John L. Montgomery, Keith Landreth, Joan Exnicios
Kathleen Bowman, and James Bowman

John L. Montgomery, Ph.D.
Principal Investigator

Final

December 1988

Prepared for the Department of the Army, New Orleans District, Corps
of Engineers, P.O. Box 60267, New Orleans, Louisiana 70160, Under
Delivery Order No. 0001, Contract No. DACW29-86-D-0094

Agency for Conservation Archaeology
Eastern New Mexico University
Portales, New Mexico

TABLE OF CONTENTS

	Page
LIST OF FIGURES	B-iii
I. INTRODUCTION.	B-1
PROJECT EFFECTS	B-1
MITIGATION PROCESS.	B-8
<i>Indirect Effects.</i>	B-8
<i>Direct Effects</i>	B-8
PROJECT RESEARCH DESIGN	B-10
PRACTICAL AND THEORETICAL SIGNIFICANCE.	B-11
ANTICIPATED GAINS IN CULTURAL RESOURCE KNOWLEDGE.	B-12
SIGNIFICANCE OF THE INVESTIGATION.	B-12
<i>Practical Social Implications</i>	B-12
<i>Management Significance.</i>	B-13
SPECIFIC RESEARCH GOALS.	B-13
II. RESEARCH DESIGN FOR PHASE I MITIGATION OF FORT ST. PHILIP (16PL39) PLAQUEMINES PARISH, LOUISIANA.	B-14
HISTORICAL BACKGROUND.	B-14
RESEARCH DESIGN.. . . .	B-19
<i>Statement of Specific Research Goals.</i>	B-19
SPECIFICATION OF RESEARCH OPERATIONS.	B-20
<i>Historical Research</i>	B-20
<i>Site Specific Background.</i>	B-22
<i>Archeological Background.</i>	B-22
<i>Archeological Aspect.</i>	B-22
III. PROJECT SCHEDULE AND DELIVERY REQUIREMENTS.	B-28
PERSONNEL.	B-28
TIMETABLE.	B-28
REPORT PREPARATION.	B-28

LIST OF FIGURES

Figure		Page
B-1.	Location of Fort St. Philip (16PL39).	B-2
B-2.	Engineering plan of proposed construction at Fort St. Philip (16PL39).	B-3
B-3.	Aerial photographs of Fort St. Philip (16PL39)	B-5
B-4.	Aerial photographs of battery at Fort St. Philip (16PL39).	B-6
B-5.	Aerial photographs of Fort St. Philip (16PL39).	B-7
B-6.	Excerpt of 1868 Mississippi River Commission Map showing the location of Fort St. Philip (16PL39)	B-15
B-7.	Flowchart of process applied to Phase I mitigation of Fort St. Philip (16PL39).	B-21

I. INTRODUCTION

The U.S. Army Corps of Engineers, New Orleans District (NOD-COE), is proposing to expand an existing hurricane protection levee along the east bank of the Mississippi River from Bohemia to Baptiste Collette Bayou in Plaquemines Parish, Louisiana. This project, known as the East Bank Barrier Levee, is part of six integrated hurricane protection levee projects known collectively as the New Orleans to Venice Hurricane Protection Project (NOV). Internal designations for the six projects are Reach A, Reach B-1, Reach B-2, Reach C, the East Bank Barrier Levee, and the West Bank Barrier Levee. All planned activity, with the exception of the East Bank Barrier Levee, are expansions and upgrades to raise the width and height of existing levees. Construction plans for the East Bank Barrier Levee have been cancelled at present.

The East Bank Barrier Levee will, if constructed, directly impact portions of Fort St. Philip (16PL39), a National Landmark (Figure B-1). The earliest construction at Fort St. Philip began in 1747 during the French Period (1700-1763). Over the years numerous military renovations and construction projects have been implemented at the site. Fort St. Philip is privately owned and is presently occupied by members of the "Christos Family", a religious-farming community. An additional associative site, the CSS *Louisiana* (16PL91), is also located within a proposed impact area of this project. However, recommendations for treatment of this resource are not incorporated into this document. Recommendations for this site are made separately under the guidance of the NOD-COE Nautical Cultural Resources Management Plan (Jennings n.d.).

PROJECT EFFECTS

A 1973 Memorandum of Agreement between the NOD-COE and the Advisory Council on Historic Preservation (ACHP) states that work at Fort St. Philip, conducted under the NOV will be allowed to proceed under the stipulations that the levee be enlarged on the riverside of the existing levee. A direct visual impact to the property caused by isolation of the Fort from the Mississippi River was noted and found to be acceptable by the ACHP (Attachment 1).

Current (1987) design specifications indicate there will be additional impacts to the property, including the construction of two borrow pits due south and north of the Fort levee and the raising and widening of the existing levee on both sides. A 100 ft (30 m) right-of-way (ROW) corridor is shown on the Fort side of the levee (Figure B-2). This work falls outside the original stipulations of the 1973 MOA.

Therefore, under Section 106 and 110f of the National Historic Preservation Act and 36CFR65 (National Landmarks Program), new recommendations, and a data recovery plan, will need to be coordinated with the Advisory Council on Historic Preservation (ACHP) and the State Historic Preservation Officer (SHPO). The ACHP and SHPO, in consultation with the NOD-COE, will decide and approve "methods to avoid, reduce, or

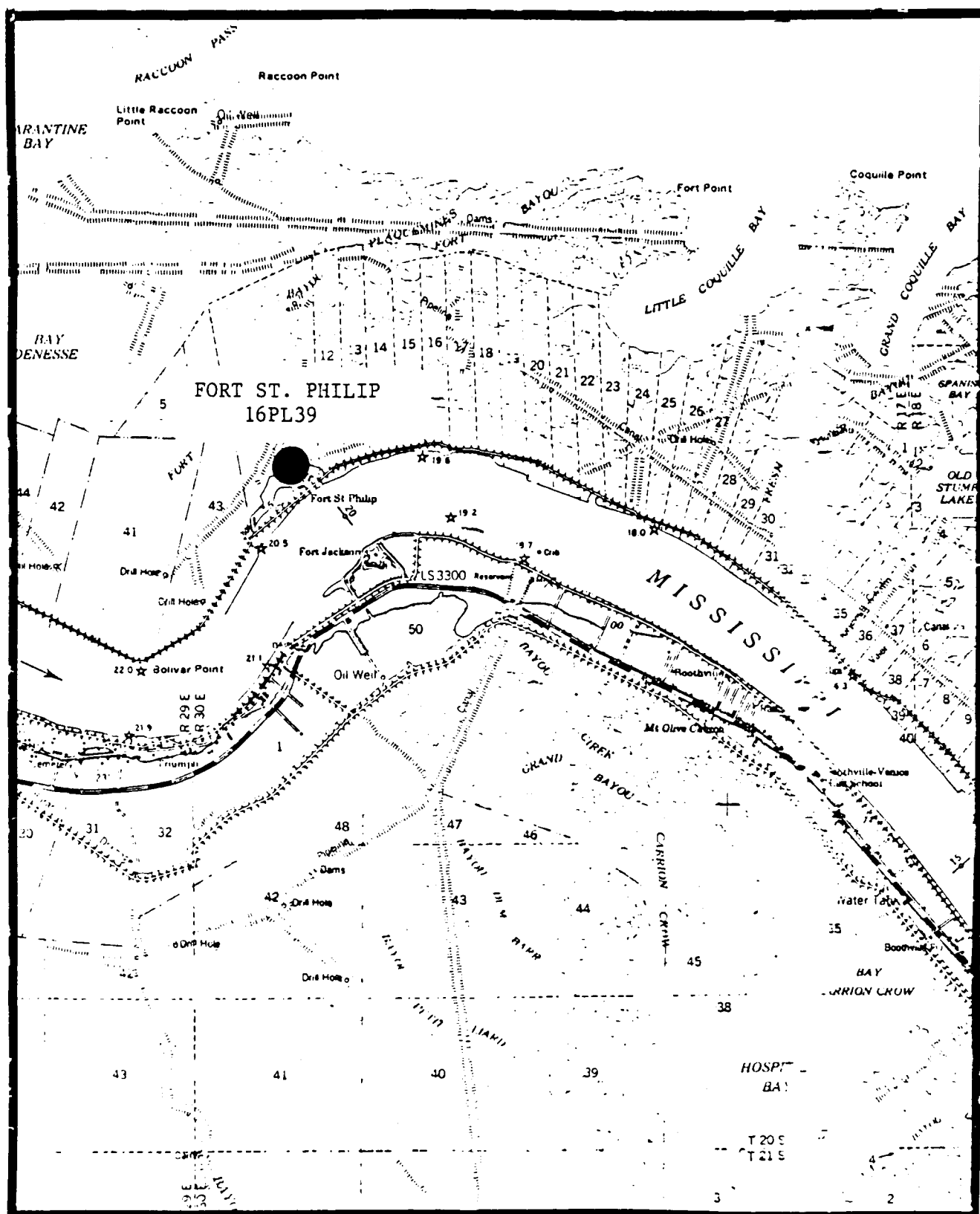


Figure B-1. Location of Fort St. Philip (16PL39). USGS Venice Quadrangle, 15 minute series (1979).

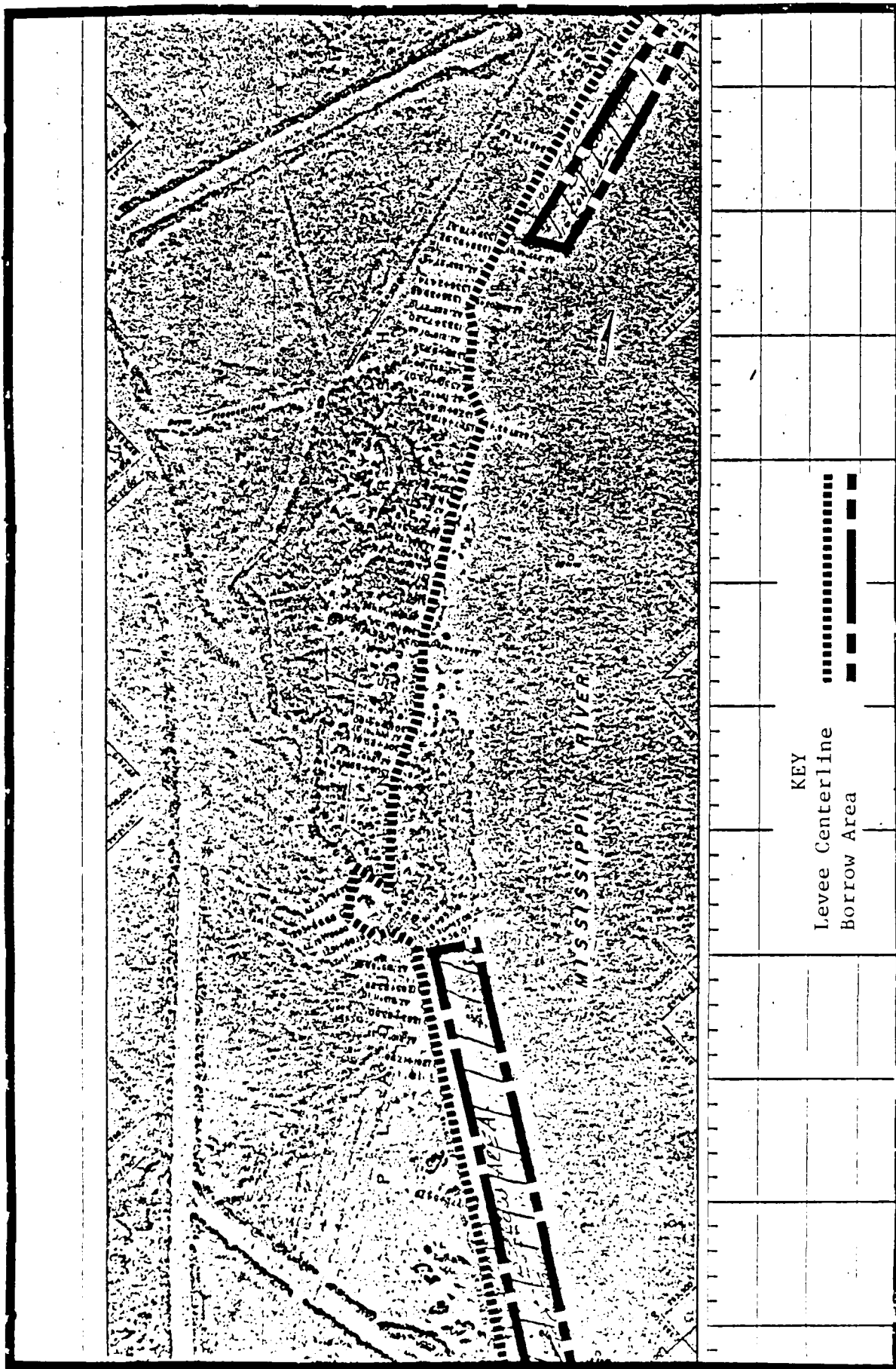


Figure B-2. Engineering plan of proposed construction at Fort St. Philip (16PL.39).

mitigate adverse effects" (Section 106) on this property. These measures will then be incorporated into a new MOA and implemented by the NOD-COE. The present landowner of the property must also be contacted and his consent must be obtained.

Several structures associated with the Fort were noted to be located within the presently proposed levee right-of-way corridor during a reconnaissance of the area in March, 1987 (Figures B-3, B-4, and B-5). In addition, historical documentation indicates a high probability for material remains associated with the Fort in the proposed borrow areas.

On the basis of the present plans, the following beneficial and adverse effects of the proposed project on Fort St. Philip are foreseen. Beneficial direct and indirect effects of the project include increased protection of the Fort from hurricane and flood generated water surges coming from the west and southwest.

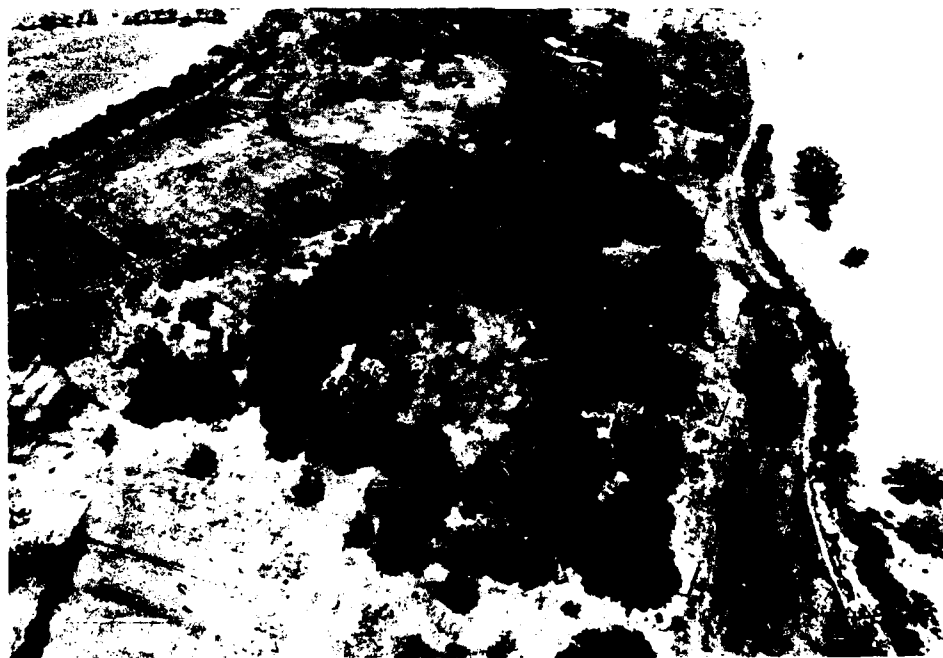
Direct adverse effects of the East Bank Barrier Levee project on the property include potential destruction of all or portions of site features situated within areas where the levee will be expanded horizontally into undisturbed land, areas where heavy equipment traffic is allowed into undisturbed land outside the existing levee, and areas where soil is borrowed for fill. Additionally, because of the nature of the sediments at the site, seismic vibrations from construction activity near structural portions of the Fort may cause damage to walls and structure foundations. This type of impact, while often not immediately visible, may cause long term detrimental effects to the entire site. The existing levee is also a part of the Fort and any proposed alterations to the levee are considered to be a direct effect on the integrity of the Fort. The additional height of the levee may also be considered as an adverse effect that may isolate the property from its surrounding environment, the Mississippi River (36CFR800.9[b]).

The indirect adverse effects of the project are related to its primary purpose of hurricane protection. While the project will protect the site from hurricane induced surges and floodwaters from the west, it will also serve to focus surge and floodwaters coming from the east, southeast, and northwest into those areas along the east bank of the river that are on the backside (away from the river) of the levee. Effects at the site from these indirect effects may include destruction (erosion), siltation, and deflation.

On the basis of the engineering data there are no means to lessen the direct effects of the proposed levee expansion. Additionally, because of changes in the engineering requirements for the levee, the original option of expanding the levee only on the riverside portion is not possible. Previous locational studies conducted by the NOD-COE, in conjunction with the projected cost of relocating and possibly redesigning the proposed levee, warranted against moving the levee. An option to avoid levee enlargement in the site vicinity would only serve to weaken the entire levee.



a



b

Figure B-3. Aerial photographs of Fort St. Philip (16PL39): a) view of Fort in proximity to proposed levee expansion; b) view along levee.



a



b

Figure B-4. Aerial photographs of battery at Fort St. Philip (16PL39). Both views show proximity of battery to proposed levee enlargement construction area near bankline: a) view south; b) view to east.



a



b

Figure B-5. Aerial photographs of Fort St. Philip (16PL39): a) view south along levee; b) view east.

MITIGATION PROCESS

The following procedures are proposed to mitigate unavoidable adverse effects to Fort St. Philip due to the construction associated with the NOV. It should be reiterated here that construction plans for the East Bank Barrier Levee have been cancelled at present. In the event that the proposed project is revived, it should first be established that the engineering specifications and proposed work areas within and near the vicinity of Fort St. Philip have not changed. If there has been no change, then the following mitigative actions are recommended.

Indirect Effects

To alleviate the potential for site degradation through the indirect effects mentioned above, a ring levee should be constructed around the Fort. An enclosing levee, similar to that presently in existence at Fort Jackson, should be constructed outside the Fort boundaries. The levee should be connected to the East Bank Barrier Levee and constructed to engineering specifications for this locale. To enhance the levee's protective function and to avoid possible additional adverse effects to significant site components, the levee location should be determined by the NOD-COE project engineer and NOD-COE cultural resource management staff and/or the project archeologist on the basis of information derived during the mitigation of direct effects.

Direct Effects

To mitigate the direct adverse effects of the proposed levee expansion and borrow areas, the research design presented herein is considered to be the preferred, prudent, feasible, and adequate treatment for arriving at a finding of "No Adverse Effect" within the context of the proposed direct effects. However, any proposed mitigative work at the site is subject to approval by NOD-COE, SHPO, ACHP, and the property owner.

The research design presented herein will guide the mitigation effort, should it be required. While the research design is intended to be flexible to accommodate possible contingencies in fieldwork and analysis, the framework provided for the proposed investigations is also comprehensive. The research design specifies the orientation of the proposed investigations; the problem areas to be addressed; the methodological approaches to be employed during fieldwork and analysis; and summaries of report preparation, scheduling, and curation specifications. The overall purpose of the proposed investigations is to collect information significant to the history of the United States, Louisiana, and Plaquemines Parish before such information is destroyed by construction activities.

At this stage of the project, a program to mitigate the direct effects of the proposed project is defined and recommended. It should be noted here that for the NOD-COE to complete its compliance obligations, mitigation of indirect effects of the project through construction of a protective ring-levee or other alternate means of protection must also be completed. A description of the Phase I and Phase II processes is provided below. Phase II requirements are determined by Phase I efforts and cannot be specified in detail at this time.

Fort St. Philip will be subjected to the following two-phase mitigation program. When this is agreed to by the NOD-COE, SHPO, ACHP, and the property owner, the data recovery (Phase I) will begin.

Phase I

- a. A Research Design will be written that includes the essential elements of the investigation and addresses Fort St. Philip, what will be done to the site, why it will be done, and what the anticipated gains are. This part defines the questions to be asked and states how they will be addressed and answered within the Research Design.
- b. The Research Design will then be sent to the SHPO and the ACHP for review and approval. If all parties concur, data recovery at the site will start, provided the landowners concur. If the landowners do not concur, the NOD-COE will have met its obligations under Section 106 and 110f of the National Historic Preservation Act.
- c. Institute partial data recovery for Fort St. Philip. Partial data recovery will include formal testing in direct impact zones. Testing will be conducted using standard archeological procedures and in accordance with the methodology specified and questions posed in the Research Design. Other partial data recovery techniques, e.g., mapping, engineering, or architectural diagrams, and so forth, may be required, depending on the types of features within the direct impact area. Partial data recovery is specifically designed to answer the questions posed in the Research Designs.
- d. Evaluate all information recovered from partial data recovery phase.
- e. Write a professional report on the partial data recovery phase that includes a determination of whether the partial data recovery constitutes adequate data recovery at the site. If adequate data has been recovered, then no further work is required and the partial data recovery will constitute adequate mitigation of direct project effects. If Phase I mitigation is determined to be adequate, plans and engineering specifications for the fort protection levee will be incorporated into the report.
- f. Consult with the SHPO and ACHP for concurrence or nonconcurrence with the NOD-COE's decisions concerning the adequacy of Phase I mitigation and the requirement, if any, for Phase II mitigation.
- g. If all parties concur that Phase I efforts constitute adequate mitigation, the agency official may issue authorization to proceed with construction of the East Bank Barrier Levee and the protection levee.

- h. If the SHPO does not concur with Phase I determinations or Phase II recommendations, procedures specified in 36CFR800 will be instituted to obtain the comments of the ACHP.

Phase II

- a. Refine the research design in light of information obtained in Phase I to address the questions to be considered during Phase II.
- b. Continue work on only those portions of the site or zones within direct impact areas that need additional work. Refine and specify, as necessary plans and engineering specifications for the protection levee that need to be in the final report.
- c. Complete work and write professional report. Incorporate final plans and engineering specifications for the protection levee into the report.
- d. Seek ACHP and SHPO concurrence that the completion of Phase II constitutes adequate mitigation of the efforts of the NOV on Fort St. Philip.
- e. If the SHPO does not concur, procedures specified in 36CFR800 will be instituted to obtain the comments of the ACHP.
- f. For all areas where SHPO and ACHP concur or 36CFR800 procedures are complete, the agency official may issue authorization to proceed.

With the completion of Phase I and Phase II requirements, including SHPO and ACHP consultations, mitigation, criteria of effect and adverse effect application, impact assessment, and research design, the work will be concluded and the NOD-COE will have met its obligations.

PROJECT RESEARCH DESIGN

Taking what is presently known about archeological method and theory, the present research design is both site specific and general. Goodyear et al. (1978) provide a realistic glimpse of the research design dilemma in contemporary archeology. The most critical needs in current research programs are varieties of research designs that enable investigators to work in a problem-oriented manner and within a number of diverse contexts. There seems to be two basic strategies evolving in cultural resource management for developing research designs. The most common approach is to develop problems, hypotheses, and relevant methods specific to one project as it goes through its various stages. A second, but less common strategy, is to formulate broad, standing research designs that may be created independently of any one project and used for many (Goodyear et al. 1978:162). The research design for Fort St. Philip combines both approaches. Problems, hypotheses, and methodologies are oriented to answering research questions concerning the Fort and the region.

Fort St. Philip is an historic site. Historical archeology, like the rest of archeology, has moved from particularistic studies towards a problem-oriented and explanatory paradigm. A leading practitioner of the new method and theory in historical archeology is Stanley South, who introduced the concept of pattern-recognition into the field (South 1977). Rather than focus on only the description of artifacts (from objects to settlements), South's approach is, instead, one where patterning of the archeological record is used to interpret cultural similarities and differences.

Historical archeologists can use existing documents about the past to complement what is found during excavations. This situation can allow very detailed hypotheses to be created and tested during archeological projects. It is extremely important to quantitatively analyze the historic intra- and inter-site patterns. Methods for doing this have been published in many places (cf. South 1977; Deagan 1982; Schuyler 1977; Deetz 1965).

Before such analyses can be conducted it will be necessary to produce a comprehensive archeological and historical syntheses of information on Fort St. Philip. These data may then be used to locate and define patterns and features that exist at the locale, their relative significance in terms of the overall site, and their proximity to the proposed direct impact areas.

PRACTICAL AND THEORETICAL SIGNIFICANCE

Efficient and effective mitigation programs require certain kinds of information at certain specific points in time. In a larger context, potential points of theoretical significance for the site under mitigation are defined from the start and the most appropriate field methods used. At the site-specific level, the proposed investigations are used to address research questions concerning the various occupational episodes at the site not documented in the historical record. At the regional and national level, valuable comparative data will be generated for use in broad scale anthropological and historical comparisons with similar cultural resources.

At a practical level two benefits will occur. The first will be the creation of a large database on the archeological and historical characteristics of the Fort. At present no synthetic body of data exists that adequately documents the Fort over time in both archeological and historical contexts. These data are useful to several professional communities including historians preservation planners, archeologists, and cultural resource managers. The second practical benefit comes from the fieldwork. Fieldwork at the site will serve as a test vehicle for feature and structure location. The utility, or lack thereof, of the field methodologies used at Fort St. Philip will assist in the refinement of location techniques to be employed in the future at this and other environmentally similar locations. These investigations will also provide the basis for refinement of research techniques if Phase II mitigation is required.

To conduct the proposed mitigative activities in an effective manner, an interdisciplinary approach must be adapted to a series of fundamental problem domains. The problem domains can, in turn, be separated into a series of research questions that can be evaluated by fieldwork, planning, data gathering, data analysis, and interpretation. These research questions and evaluative methodologies for Fort St. Philip are presented in Chapter II.

ANTICIPATED GAINS IN CULTURAL RESOURCE KNOWLEDGE

An explicitly stated interdisciplinary research approach to the Phase I mitigation of the Fort St. Philip site will produce gains in cultural resource knowledge. This research approach will generate, or at least potentially generate, further substantial field work that can test many hypotheses about cultural processes in the project area. Another anticipated gain will be found in the continued refinement of potential research questions that may be addressed at Fort St. Philip. By creating a matrix of probable research questions that may or may not be answered from this site, archeologists and historians can better document unique or important information from the site instead of producing potentially redundant or inappropriate information. This approach focuses attention on the fact that testable hypotheses can and should be identified before fieldwork begins.

SIGNIFICANCE OF THE INVESTIGATION

Practical Social Implications

Contemporary cultural resource management is based on legislation and general public awareness and concern for significant cultural sites and events. While often translated into scientific terms, cultural resource management investigations are much less often translated into terms readily understood by the public. This is a potential problem, for it is the public who support the work to identify, evaluate, and preserve important cultural resources that otherwise would be lost or destroyed. There is, then, a need to identify how the public can gain from the proposed investigations at Fort St. Philip.

From the perspective of social importance, it is crucial to recognize that cultural resources are nonrenewable. If destroyed, the information about the past can never be reconstructed. Fort St. Philip, like its counterpart Fort Jackson, is a National Landmark. Like Fort Jackson, its importance to national, regional, and state history cannot be understated. The historical influences incurred by the Fort's initial construction and subsequent occupations extend far beyond its regional location.

In addition, the history and occupation of Fort St. Philip encompasses all three of the major historical periods for the region (French, Spanish, and American). Research at Fort St. Philip can serve to both compliment the history of Fort Jackson as well as provide valuable new information on the earlier French and Spanish occupations of the site and region.

Management Significance

A comprehensive, site-oriented research design is a scientific research tool as well as a management tool. Particularly for management concerns, the research design provides a means for cost-effective planning as well as consistent evaluation of on-going activities. The research design also allows for a set of standard procedures to be followed and evaluated by professional peers and cultural resource management specialists.

Research designs are a plan of action. Inherent in this is the fact that a well thought out research design is used as a planning document. The research design can identify how cultural resources should be approached during fieldwork and analysis, and what important research questions will be addressed during analysis. Thus, the planning aspects of a research design provide significant information to management concerns because it spells out what should be expected and how the project will be implemented, conducted, and completed. By establishing the procedures for research during the planning stage, an effective method for positive and consistent evaluation is achieved.

Of additional significance to NOD-COE management will be the generation of locational and definitive data on site boundaries and features. These data will help plan and structure future projects within and near Fort St. Philip.

SPECIFIC RESEARCH GOALS

Mitigation of adverse impacts to Fort St. Philip through historical and archeological investigations is the major focus of research. This research design specifies the research goals to be approached at the site and identifies methodological procedures used to approach each goal. The following chapter identifies the research orientation of the proposed investigations, the problem areas to be addressed within the scope of the study, and the methodological approaches to be employed during fieldwork and analysis. Chapter III lists report preparation, scheduling, and curation specifications.

II. RESEARCH DESIGN FOR PHASE I MITIGATION OF FORT ST. PHILIP (16PL39) PLAQUEMINES PARISH, LOUISIANA

HISTORICAL BACKGROUND

Fort St. Philip is located on the east bank of the Mississippi River at approximately river mile 20L (Figure B-1). The Fort has seen numerous military occupations, beginning with the French in 1747 and ending with the Americans in 1929. Over the years many associated structures were built, altered, renovated, and/or destroyed. Figure B-6 illustrates the Fort as it appeared in 1868. Fort St. Philip is presently occupied and maintained by members of the "Christos Family", a religious-farming community. The Fort and property are owned by Mr. Frank Ashby of New Orleans.

During the French Colonial Period (A.D. 1700-1763), Governor De Vaudreuil authorized the construction of "defenses" some 40 miles below English Turn at what is known as Plaquemines Bend. Originally Governor Vaudreuil did not want to build a fort at this location, as it was prone to seasonal flooding. The strategic location of the site, however, outweighed the concern with flooding in the area, and forts were constructed in 1747 on the east and west banks of the river. The east bank fort was known as Fort Plaquemines (now Fort St. Philip) while the west bank fort was called Fort Bourbon. The Forts, designed by the Colony's Engineer, Bernard De Verges, were constructed of earth with wooden stake fascines. Personnel at Fort Plaquemines and Fort Bourbon were not involved with any military action during the French Colonial Period.

In 1763, the colony of Louisiana was transferred to the Spanish Crown. During the early years on Spanish control, both of the Forts were maintained, but no major alterations were made until 1786, when Governor Carondelet proposed the construction of two new Forts. In 1786 work was begun on modifying Fort Plaquemines at the east bank at the mouth of Bayou Mardis Gras. The new Fort would become known as Fuerto San Felipe (St. Philip).

Colonel St. Maxent, who owned land in the area around Fort St. Philip, built cabins for black laborers at the Fort and ovens for baking the brick used in the construction of the walls of the Fort (Despatches of the Spanish Governors, after Greene 1982:48). The design for Fort St. Philip was irregular, consisting of a bastion and a series of salient and reentrant angles, an attribute which was later much criticized (Robinson 1977:20). It was built over long piles driven into the mud with revetments of brick and wide parapets overlooking the river. A barracks for 300 men and a powder magazine were constructed inside, while a 12 foot wide ditch filled with water served as an exterior protection against an infantry assault (Robinson 1977:20)

Spanish engineers encountered tremendous difficulties constructing and maintaining Fort St. Philip. Floating top soil created constant cracks in the masonry, plant growth persistently encroached, mud and debris steadily

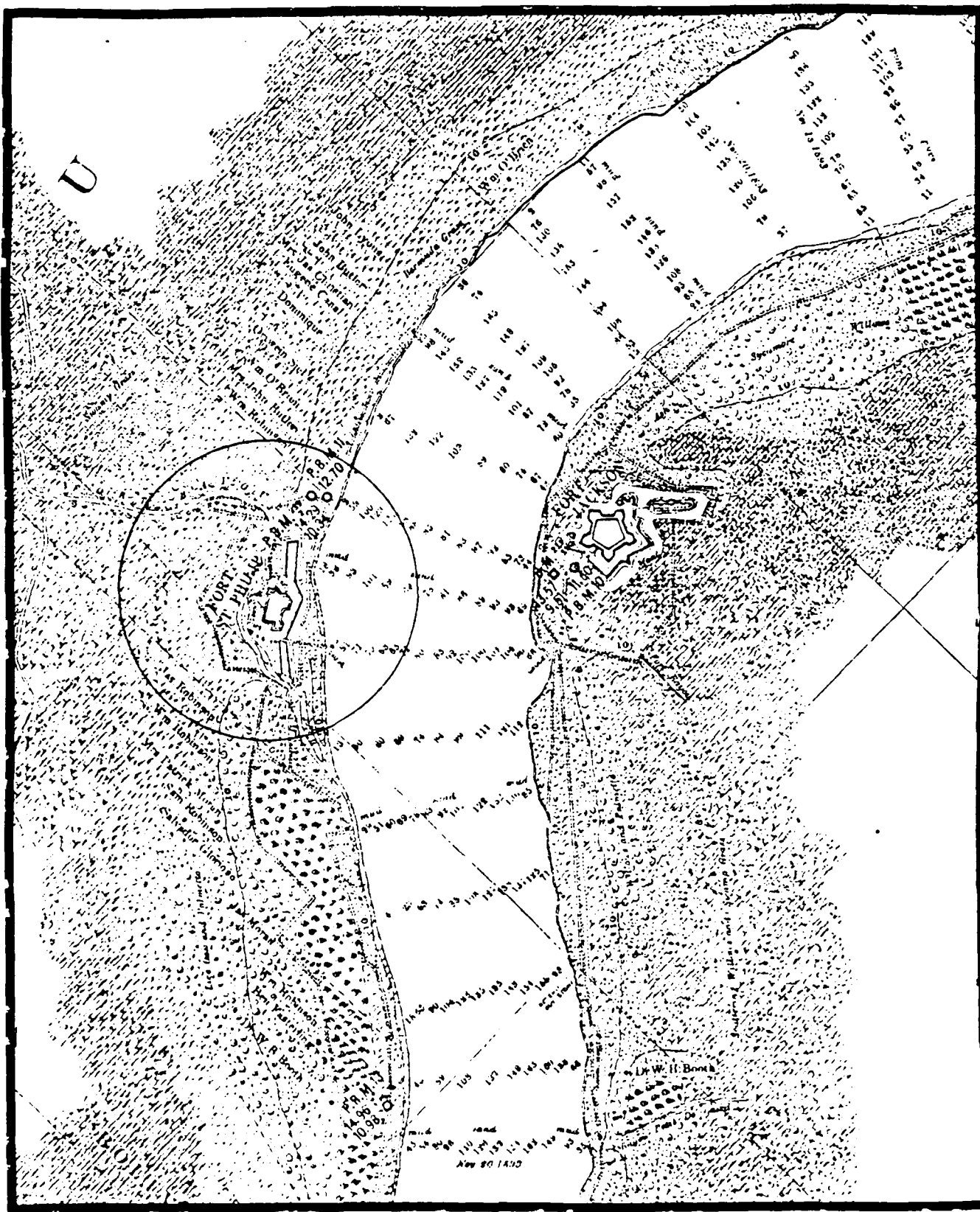


Figure B-6. Excerpt of 1868 Mississippi River Commission map showing location of Fort St. Philip (16PL39).

filled the ditch, and the parade ground was frequently filled with water. Weather conditions were not always favorable and numerous delays slowed construction. In 1793, a hurricane struck and "several of Colonel St. Maxent's black laborers drowned and the work of revetting the walls with brick slowed" (Greene 1982:47). Carondelet sent three Spanish galleys to be stationed at Mardi Gras Bayou directly south of the Fort to guard the construction activities (Greene 1982:47). Supervising the construction of Fort St. Philip in January 1796, Guillemand wrote to Governor Carondelet, "the usual method of using filing has been abandoned. As a consequence we have joined together square pieces of timbers, crossing them one with the other and under them boards ten inches thick are placed" (Robinson 1977:23).

In 1794 with Don Felix Trudeau serving as commandant, Fort St. Philip's armament consisted of twelve 18 pound cannons. The garrison consisted of a captain and 100 men who were rotated monthly. In addition, 100 convicts were employed year round repairing cracks in the walls.

In 1795 Don Pedro Favrot was appointed commandant of Fort St. Philip. An observer of the site in the same year gives this description,

the fort is on the left side of the river at the mouth of a small creek called Mardis Gras, on a moving marsh which extends as far as the sea, and which presently no outlet by land can only be reached by the river. The parapets which front the river are eighteen feet thick, lined with brick, and it is surrounded with a ditch twenty feet long and twelve feet thick. It is a very considerable fort, with barracks for 300 men, a house for the commander and a very good powder magazine" [Favrot 1943:749].

Excepting constant repairs, few improvements were made at Fort St. Philip during the remainder of the Spanish period.

In 1800, the colony of Louisiana was ceded to France. France subsequently sold the colony to the United States in 1803. On December 23, 1803, American General James Wilkinson ordered Captain Cooper to hold his company of artillery ready to go to Fort St. Philip on short notice (Casey 1983:206).

The new American governor, Claiborne, ordered an immediate survey of all defenses in his jurisdiction. Claiborne recommended that improvements be made at Fort St. Philip. By this time much of the brick facing on the walls at Fort St. Philip had been destroyed (Greene 1982:68). Improvements were begun on Fort St. Philip in February 1808. Bricks were brought to the site on flatboats from New Orleans. By August, 80 laborers and 30 mechanics were working at the Fort. New works were constructed over the old Fort, making Fort St. Philip approximately 240 feet wide and 360 feet long. By early 1809 the improvements were completed (Robinson 1977:24). Yet storms continued to plague the site. In August 1812, a hurricane severely damaged the structure, blowing down a side of the soldiers barracks, filling the ditches with large trees, and putting seven feet of water inside the Fort (Casey 1983:207).

Reconstruction of Fort St. Philip began immediately but was halted in 1813 as a result of a lack of funds. Improvements were resumed in the summer of 1814 when a British invasion appeared imminent. In December 1814, immediately prior to the British invasion, General Andrew Jackson visited Fort St. Philip and ordered that the barracks be torn down to prevent a fire within the Fort. Jackson placed Major Walter H. Overton in command of Fort St. Philip with a garrison of 366 men, including one unit of free men of color (Casey 1983:207).

In support of the land invasion, five British ships attempted to reduce and pass Fort St. Philip in January 1815. From January 9 to January 18, 1815, the British bombarded the Fort with two-ten inch and two thirteen-inch mortars. On January 17, the American garrison received ammunition for their 13-inch mortars which allowed them to reach the attacking British ships. The British withdrew on the morning of January 19, 1815, leaving the Americans in possession of the Fort.

Realizing that the British assaults on New Orleans and Washington may have been deterred by an adequate system of fortifications, Congress authorized the construction of a unified cordon of defense. Following a survey made by Captain James Gadsden, U.S. Army Corps of Engineers, French military engineer Simon Bernard surveyed the region for the United States and determined the Fort St. Philip would have to be further improved and that an additional fort was needed (Robinson 1977:25).

The hospital located outside the wall along Bayou Mardi Gras was too small and the officers' quarters located about 100 yards outside the Fort were also inadequate (Greene 1982:116). One visiting official reported that "all filth and everything calculated to putrefy and become offensive" should be disposed of at least a half mile from the Fort (Greene 1982:117). It was sometime in the late 1820s or early 1830s that a new one-story barracks was built inside the Fort close to the river front (Greene 1982:118). In 1842, President Tyler signed a proclamation declaring Fort St. Philip a Military Reservation (Greene 1982:118). More changes were made at the Fort in the late 1840s due to the continuing war with Mexico. Granite traverse circles were added to the barbette batteries and construction began on the two exterior batteries (Greene 1982:120). Fort St. Philip served as a training facility for the soldiers and a debarkation point for troops and supplies (Greene 1982:134), but saw no action during this war.

Between July 1840 and March 1857, \$250,000 were appropriated for the repair and improvement of Fort St. Philip. Most of this work was accomplished under the direction of P.G.T. Beauregard (Casey 1983:209). In January 1861, with the secession of Louisiana from the Union imminent, Governor Thomas O. Moore ordered Major Paul Theard, commander of the battalion of Orleans Artillery to take possession of Fort St. Philip and Fort Jackson for the State of Louisiana. Observations by P.G.T. Beauregard led to the placement of more cannon in each of the Forts, as well as, the felling of trees to mask the fire of the Forts. In addition, a barrier constructed of cypress logs and chains, and held in place by 30 anchors, was placed across the river between the Forts (Bearss 1961:408).

In early April 1862, a Union fleet of over 40 ships and 21 mortar boats massed at Head of Passes, in the Mississippi River. Work continued on the Forts and by April 10, 1862, 52 cannon were in place in Fort St. Philip, predominantly smooth bore 32 pounders (Pratt 1956:33). The majority of the cannon were aimed to fire downstream at ships as they slowed to make the sharp right angle turn at Plaquemines Bend.

Although Fort St. Philip was spared the furious mortar bombardment that inflicted heavy damage on Fort Jackson from April 18 to April 24, 1862, problems were evident in the Fort from the start. Exceptionally high water not only inundated the parade ground and lower barracks but also largely destroyed the chain link boom crossing the river. In addition, many of the men manning the guns were inexperienced. Shortly before the Union fleet's attack on the Fort, many of the most experienced gunners were taken from Fort St. Philip and placed aboard the Confederate Ironclad C.S.S. *Louisiana*, which functioned as a floating battery during the battle. This resulted in a largely inexperienced crew manning some of the most important guns in the Fort (Squires 1882:551b).

Early on the morning of April 24, 1862, the Union fleet successfully passed the Forts. Although firing over 1300 shots at the enemy, the fire from Fort St. Philip was largely ineffective. Captain M.T. Squires, in command of Fort St. Philip, attributed this to the pitch dark night, thick clouds of smoke, and inexperience of the troops in the Fort (Squires 1882:552b). Excepting the destruction of several guns on the outer works, little damage occurred at Fort St. Philip. Casualties amounted to two killed and four wounded (Bridges 1882:550c).

Following a mutiny by German Confederate troops in Fort Jackson several days after the battle, Fort Jackson and Fort St. Philip were surrendered to Union troops. For the remaining years of the war Union troops occupied both Forts. Fort St. Philip and Fort Jackson were manned by black troops from the Corps d' Afrique (Greene 1982:180). Political prisoners (Confederate), including the mayor of New Orleans, were imprisoned at the Forts.

The 1862 battle had demonstrated the outdated nature of brick and masonry Forts and the need for heavier caliber cannon. Between 1872 and 1876 over \$213,000 was spent on renovating Fort St. Philip even though no formal garrison was stationed there.

In the mid and late 1890s the Spanish-American War accelerated the placement of heavy caliber modern guns at Fort St. Philip. Several new batteries were constructed adjacent to the Fort to receive these and other modern armaments. A map dated October 4, 1916, shows proposed locations at Forts St. Philip and Jackson for anti-aircraft batteries. During World War I crews who serviced these batteries were based at Jackson Barracks in lower Orleans Parish (Casey 1983:212).

Both Fort St. Philip and Fort Jackson were abandoned in February 1922 pursuant to S.O. No. 10, 4th Corps Area dated January 23, 1922. Fort St. Philip was declared surplus and sold in October 1926 after the remaining guns had been removed from it (Casey 1983:213).

On January 12, 1929, the Fort was purchased by John and Joseph Vela, oyster fishermen who also owned land at Olga. The Vela brothers tore down many of the wood framed structures at Fort St. Philip and used its lumber to build a shrimp cannery (Greene 1982). The business failed and the brothers entered the more profitable business of selling contraband liquor during Prohibition. In the early 1960s, Judge Leander Perez convinced the Plaquemines Parish Commission Council to set up a detaining area for civil rights activists at the Fort's Battery Merrill; however, none were ever detained at the site. Mr. Ashby, the present owner, has allowed the Christos family to live and farm on the Fort grounds. In 1961, Fort St. Philip was listed as a National Historic Landmark and placed on the National Register of Historic Places.

RESEARCH DESIGN

Statement of Specific Research Goals

Like Fort Jackson, there is a lack of archeological and historical syntheses on this site. In order to conduct adequate research it first will be necessary to define in detail the site's internal developmental patterns through time. These data may then be used to locate and define patterns and features that exist at the locale(s), their relative significance in terms of the overall site, and their proximity to the proposed impact areas. Once these data are acquired, they may then be used to assess the significance of site features located within the effected area and provide recommendations for further treatment, if necessary.

The proposed investigations at Fort St. Philip will provide information relevant to the research goals discussed below, and in so doing mitigate adverse direct effects of the NOV to the site. The research will also provide the necessary data for mitigation of indirect effects to the site deriving from the proposed NOD-COE project. Phase I mitigation at Fort St. Philip will locate, define, record, and conduct partial data recovery and evaluate assoc. Fort features within the directly affected areas as defined in Chapter I (Figure B-2). The proposed research will also provide sufficient information for the placement of a protective ring levee around the site. When constructed, the ring levee will serve to mitigate the indirect effects caused by the proposed project.

On the basis of current historical data, the following features may be located within, or peripheral, to the areas directly affected by the proposed project. It should be noted that because of the lack of synthetic data on the Fort, the following listing is neither mutually exclusive nor totally exhaustive.

1. Historical documents are unclear on the evolution of Fort St. Philip from its origin as the French "Fort Plaquemines", through its acquisition and modification by the United States. The French battery was in use when the Spanish government took control of Louisiana in 1763. In the 1780s, it was recommended that a new Fort be built. The Spanish may have razed the Fort, abandoned it, or built the new Fort on the location of the old battery. The original

boundaries and features of the original Fort may lie within the proposed levee corridor.

2. The exact location of the workers' quarters for the various Fort construction phases is unknown. However, it is likely that remains of these are within the proposed borrow area and levee corridor to the north of the Fort.
3. Colonel Maxent's plantation is purportedly located adjacent to the Fort on the upriver side. Remains of the plantation may lie within the proposed levee corridor and borrow area north of the Fort.
4. Historical documents indicate the existence of housing for enlisted men's families. These remains may lie within the proposed levee corridor and borrow area north of the Fort.
5. The wreck of the CSS *Louisiana* (16PL91) is purportedly located at the south end of the Fort. The proposed borrow area at the south of the Fort may directly impact this vessel.

Phase I mitigation at Fort St. Philip will attempt to locate, define, record, and perform partial data recovery and evaluation of these and other potential associated Fort features within these defined impact areas. As stated at the beginning of this document, the CSS *Louisiana* (16PL91) will not be treated under this research design. Recommendations for treatment of this resource will be made under the guidance of the NOD-COE Nautical Cultural Resource Management Plan. The following research goals/procedures are proposed for Phase I data recovery at Fort St. Philip. Because of the known historical and environmental interrelationship between Fort Jackson and Fort St. Philip, and the need for comparable data sets, the basic research procedures for background data acquisition and fieldwork are essentially the same for these Forts.

SPECIFICATION OF RESEARCH OPERATIONS

As noted above, the location of the abovementioned and other potential features of the Fort is unknown at present. There is a high probability that some or all of these may be located within or peripheral to proposed impact areas. Research operations will be conducted in an effort to locate, define, sample, and evaluate potential archeological remains associated with these features within the projected impact areas. A series of interrelated research operations will be conducted to approach this goal. The results of the operations will then be synthesized into a single document oriented towards addressing the research goals. Figure B-7 illustrates the process of the proposed research at Fort St. Philip. The research operations are defined below:

Historical Research

A general historical background of Plaquemines Parish will be provided. Additional detailed historical data are necessary to develop the site-specific historic context level. The approach will follow the general standards for creation of historical contexts in the Secretary of

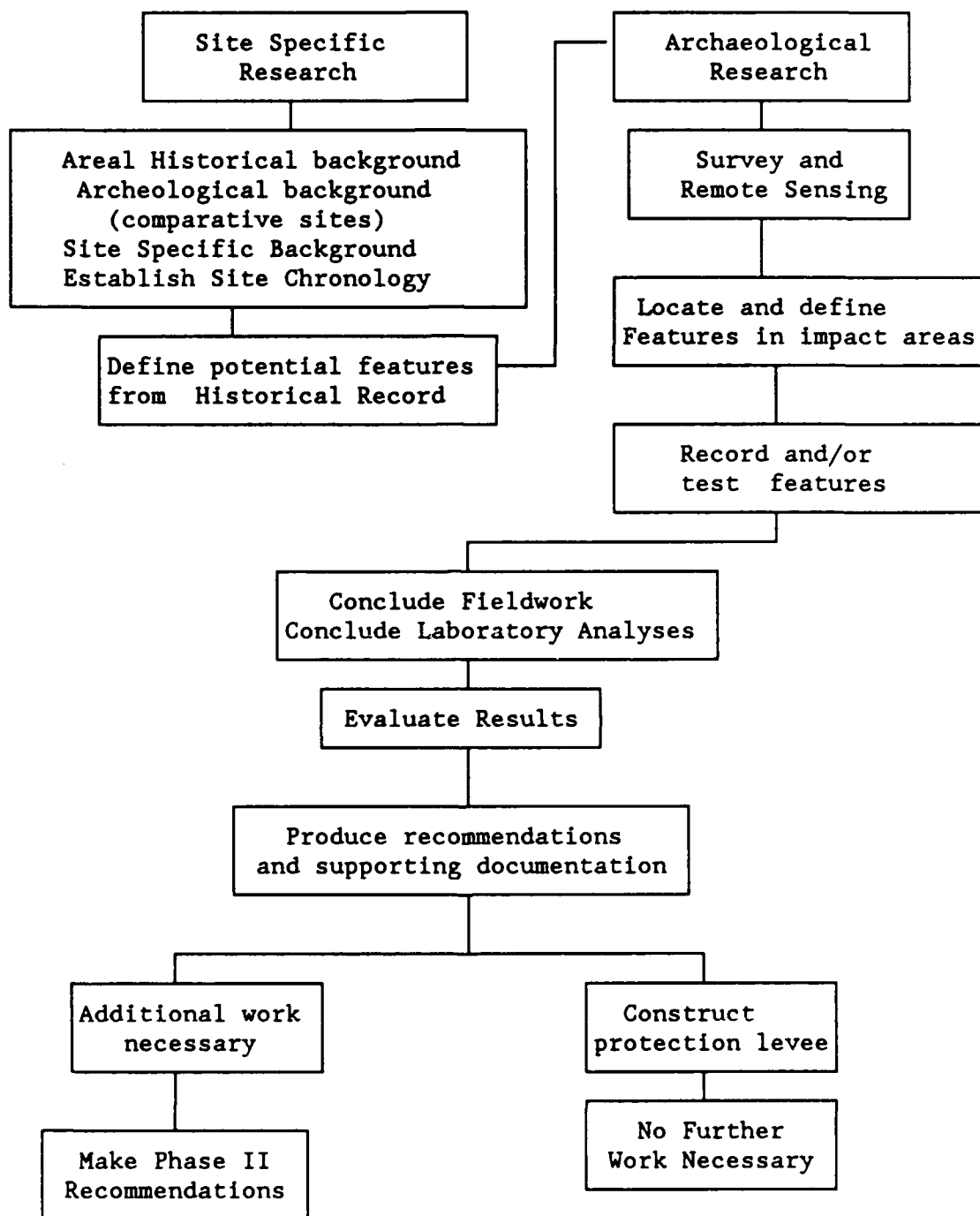


Figure B-7. Flowchart of process applied to Phase I mitigation of Fort St. Philip.

the Interior's Standards and Guidelines (48FR44738). The historical background will be primarily oriented towards establishing and documenting associative historical influences that occurred prior to, during, and immediately after the periods of occupation at the Fort. These data will in turn be used to define and address potential historical influences on the site in terms of site selection, site modification(s), internal site organization, and site developmental processes.

Site Specific Background

There are numerous historical maps depicting Fort St. Philip during the American Period, but comparatively sparse information and maps exist concerning the earlier French and Spanish periods. Additional research is necessary to determine the location of structures related to these earlier periods. To accomplish this, map data will be acquired from several sources, including the National Archives in Washington, the U.S. Army Archives, the Louisiana National Guard Headquarters (which maintains a collection of maps on Fort St. Philip and Fort Jackson), the Historic New Orleans Collection, the NOD-COE, and the Geoscience map library at Louisiana State University in Baton Rouge. All archival and documentary maps will be acquired before fieldwork begins from the archival maps, or series of overlay "templates" will be prepared and used to guide field investigations. Additionally, sources such as the United States Census and military rolls will be found and referenced for all relevant information concerning the soldiers, civilian workers, and their families who lived at the site during the French, Spanish, and American periods.

Archeological Background

A search of appropriate historical, anthropological, and archeological literature will be conducted. These literature sources should provide comparable information on various studies of military sites from different time periods and areas. For example, with some differences accountable for by local environment and politics, military fortifications constructed by the French during a given time period are expected to follow a general pattern. Correlation of data on other French, Spanish, and American forts constructed during similar time periods may indicate the probable location of Fort features not illustrated on maps of Fort St. Philip. These data will be applied to the interpretation of the Fort in general, as well as used to indicate additional high probability areas for features and activity areas within the NOV impact zones.

Archeological Aspect

Fieldwork at the site will begin only after the preceding background data has been acquired. Field strategies will be conducted to locate, identify, define, and record all structures, features, and activity areas within the defined impact zones. The field location and verification of fort-related cultural features is the most important facet of the proposed research. A series of procedural steps are necessary to accomplish this goal. These are described below.

Photogrammetry/Aerial Photography. A series of maps and aerial photographs will be examined. Maps will include historical maps of the Fort as discussed above, as well as Mississippi River Commission survey maps and early land ownership plats dating before and during the period of site occupation. Aerial photographs will also be examined. These will

include NOD-COE air photographs dating to the 1930s on file at the NOD-COE engineering file room, recent NASA false-imagery photographs and photographs taken on reconnaissance flights of the project area. From these data, a series of single-scale overlays will be produced. The overlays will define and document the site evolution during its period of occupation, identify post occupational disturbances that may influence interpretations, and assist in rapid field location and verification of prominent site structures and features. Other field methods will complement the photogrammetry/aerial photography efforts.

Site Survey: Pedestrian and Remote Sensing. Following the acquisition of the preceding data, a pedestrian and remote sensing survey of impact areas at the site will be conducted to locate and define isolated artifacts, surface features, and structural remains. Pedestrian survey will be conducted in flagged transects at 6 ft (2 m) intervals. The survey will be conducted within the direct impact areas of the site and may extend beyond these areas if the background data has defined a potential for features and structures peripheral to these areas that may be affected by the proposed NOV construction. Because the site is within a rather dynamic depositional environment, an effort will be made to locate and recover data from sub-surface features.

Because of its relative isolation and geomorphic situation, the archeological context of Fort St. Philip has not suffered from cultural and natural disturbances. Remote sensing is a practical tool for use in investigations at this locale. Four techniques, aerial photogrammetry, soil chemistry, magnetometer survey, and auger testing, will be used to locate these potential features.

Aerial photographs, black and white and false imagery, will be examined for possible subsurface features indicated by topographic and vegetative anomalies. These data will be gathered from photographs on file at the NOD-COE.

In historical archeology the use of soil chemistry has proven particularly useful in the location of features. However, some types of testing such as spot phosphate tests (cf. Eidt 1973), should not be used on this site. Fort St. Philip is adjacent to the Mississippi River. The constant dumping of phosphates into the river during recent historic times, combined with significant fluctuations in the water table, has, in all likelihood, permeated this site with phosphates through the action known as reflux pumping. In this process capillary action draws the water from the perched water table upwards into the site sediments. Additional influences in the site sediment chemistry consists of percolation, infiltration, and leaching created by semi-seasonal flooding and the presence of large quantities of oyster shell on the site.

Instead of spot phosphate testing, a series of soil chemicals will be analyzed at the locale in an attempt to isolate those that may reflect areas containing subsurface cultural features. Chemical tests of samples will include ph, magnesium, phosphorous, zinc, iron, potassium, and sodium. As a control, sediment samples will be taken above, below and to the east of the site. One inch core test(s) will then be taken at known site features (e.g., privies, dumps,) during the first week of fieldwork.

A comparative analysis of these samples will be made to isolate a potential chemical or suite of chemicals that may be indicative of certain features. If such a chemical signature is found to exist, then subsequent patterned tests will be taken within the levee corridor and proposed borrow areas in an attempt to locate additional potential subsurface features.

A survey of the proposed impact areas with a proton precession magnetometer will also be conducted to locate subsurface features. The survey will be conducted prior to chemical testing to avoid possible interference from soil disturbances resulting from core testing. A control for the non-anomalous magnetic field at the site will first be established by taking 100 or more timed readings at established stations on four undisturbed locations on the site periphery. Two readings will be taken at two meter intervals across the site. If significant variation occurs between the two readings another set will be taken. A maximum ten gamma interval will be used to make the magnetic contour map of the site. The contour map will be correlated with observed anomalies created by surface features to identify potential subsurface features at the site.

Auger tests will be taken at ten meter intervals across the impact areas and at locations of potential features identified on the historical maps. These tests will be conducted with a 12-inch power auger to depths exceeding the projected total depth of impact and not less than one meter. The depth of the test will be dictated by the micro-stratigraphy of the preceding test. In areas of point bar and recent flood deposits, the test may exceed one meter; conversely in deflated or culturally disturbed areas the test will stop at one meter or when culturally sterile sediments are reached. Auger tests will not be conducted if they may undermine or damage an above ground structure. If buried structural remains are encountered during a test, augering will cease and a controlled 1 x 2 meter unit will be excavated at the location. All tests will be backfilled immediately upon completion. These tests serve two purposes. First, they will locate and potentially define subsurface features. Secondly, artifacts recovered from the tests may indicate the location of non-feature activity areas within the impact zone.

Site Mapping. After pedestrian survey a detailed site map will be prepared with an EDM or transit. This map will incorporate topography, vegetation, surface features and isolated artifacts, and impact areas. The site map will help structure the investigations at the site and will be constantly updated throughout the course of fieldwork. Vertical and horizontal control will be established by placing a permanent datum at the southeast site perimeter away from the impact area. A 10-meter interval staked grid will be established within the levee corridor. The grid will be oriented to the impact corridor and referenced to the primary datum. If possible, the primary datum and grid will be referenced to USGS UTM grid coordinates. If this is not possible or feasible, then all grid points and measurements will be referenced to an arbitrary datum designation. Vertical control, if not available from USGS benchmarks, will be maintained through an arbitrary designation at the site's primary datum. Secondary datums may be established at various points within the site for reference.

Site Excavation and Recordation. Following survey, mapping and location of potential subsurface features, the next step will record the known surface features and structural remains, and locate, define, and sample all subsurface features. A set of standardized forms will be used to record these features at the site. The format of these will be mutually agreed upon by the NOD-COE and the contractor. These forms will include but not be limited to isolated finds, features, structures, excavation units, excavation level, photographic, field notes, special samples (e.g., botanical, soil), and soil and feature profile forms. Measurements of historic features and structures will be taken in metric and English standard systems. For rapid assimilation of site information, these data will be input into the Cultural Resources Information System (CRIS) in a format mutually determined by the contractor and the NOD-COE.

Excavations will define and sample the site surface features, as well as, subsurface anomalies. Sampling of a site feature will consist of obtaining samples of material refuse within or surrounding the feature. The size of these samples will be judgementally derived to obtain sufficient data for functional identification of the feature or structure. In the case of a privy or dump, the feature may be excavated in halves or quartered. If the feature consists of the structural remains of a habitation, officers' quarters, hospital, etc., then sampling of sheet refuse around or within the structure may be conducted. In all cases excavations will cease when either a 50% sample of fill or a sufficient sample for identification and interpretation has been obtained. Feature excavation will identify the feature's form and function. Excavation units will not exceed 1 x 2 m square and excavation levels will not exceed 10 cm in depth. When appropriate, units will be excavated in contoured, arbitrary, 10 cm levels.

All excavations will be conducted in a traditional archeological manner using hand tools (shovels, trowels, etc.). All excavated fill will be screened through 1/4-in or less mesh hardware cloth. A four liter flotation sample will be taken from selected feature levels and control units to sample fine-fraction remains at the site. Since natural strata are difficult to discern in this environment, it may not be possible to separate potential cultural components. If well defined natural or cultural stratigraphic units are encountered during excavation, continuing work will be conducted within these levels. Stratigraphic profiles of representative walls of each excavation unit will be drawn, unless the project archeologist determines that the strata are sufficiently similar to justify drawing fewer profiles. All profiles will be drawn on metric graph paper. Profiles will be described following the terminology and style of the *Soil Survey Manual* (U.S. Department of Agriculture 1975).

Testing of subsurface anomalies will consist of the placement of a single 1 x 2 m control unit within the anomaly center. The unit will be excavated in arbitrary 10 cm levels to sterile or until the feature is located and/or functionally defined. If sufficient information is recovered during testing to ascertain the feature's function then no further excavations will be conducted. If additional data is needed, then stratigraphic information from the control block will be used to quickly remove overburden in additional units and recover feature information. Once the feature is functionally and spatially defined, testing/excavation will cease.

A sample of sheet refuse will also be obtained from the site. Analysis of sheet refuse can determine and refine intra-site activity areas not represented by features and structures (cf. Moir 1982). This sample will be obtained through recovery of cultural material in the fill of the aforementioned auger tests.

Field Photography. Duplicate black and white negatives and color slide photographs will be taken of the site before, during, and after data recovery operations, and of all site features and structures, test units and test unit profiles, and daily operations. Black and white negatives and contact sheets will be subjected to an archival quality wash. The photographs will be organized in a log and will contain the appropriate photographic documentation form.

Laboratory Analyses. In establishing the format for the laboratory analysis, an initial but far reaching goal is to formulate a single analytical system that can achieve the stated research objectives in a quantifiable manner. In so doing, the analysis must be adapted to the specific site type rather than any "formally" recognized system. Such an approach based on known historical activities at the locale provides a more culturally oriented picture of the site occupation. In order to obtain daily feedback between field operations and analytical results, both field and laboratory analyses will be conducted concurrently. To acquire comparative data, analytical procedures used on the assemblage recovered from this site will be consistent with those used during the proposed investigations at Fort Jackson (see Annex A).

Two analytical methodologies, descriptive and functional, will be applied to the artifacts recovered from Fort St. Philip. A combination of these two analytic methods provides more culturally oriented data of the site than would either a solely descriptive or functional system. Descriptive analysis will identify data relevant to the "history of the artifact", that is, its place of origin, manufacturing technology, and dates of manufacture. Data derived from descriptive analysis will also evaluate artifact and feature chronology. For example, artifacts associated with the French, Spanish, and American occupations may be used to chronologically associate features or structures in lieu of other historical evidence. French artifacts (such as faience ceramics or French gun flints) would also indicate the possible location of the French battery or associated buildings.

The second level of analysis will consist of functional identification of artifacts. Artifacts will be examined using a functional typology similar to that used by Sprague (1981), Adams (1980), and Castille et al. (1985) to allow for the functional identification of features and cultural activity areas. Functional groupings will be derived from a synthesis of historical data on this site type. These data will be used to generate a listing of "expected" site features and activity areas and the cultural assemblage (structures, features, and artifacts) that should be found at Fort St. Philip.

Laboratory Forms and Recordation. A set of laboratory analysis forms will be prepared before fieldwork begins. These forms will be designed by the contractor in consultation with the NOD-COE. Due to an anticipated

large amount of recovered cultural materials, all data will be recorded in CRIS for rapid analyses. The field selections for this database will also be designed by the contractor in consultation with the NOD-COE.

Analytical Procedures. Field identification and curation of artifacts will be based on a code system. Code 1 will identify those artifacts found in-situ. Code 2 artifacts are those found within a quadrant or level of an excavation unit or feature, while Code 3 artifacts are those recovered from screening. Code 4 refers to general surface finds at mapped locations. All recoveries will be referenced to the site grid.

Faunal Analyses. Faunal remains may also help delineate activity areas at the Fort. Additional ancillary data may be obtained through the acquisition of faunal remains in association with features dating to the various Fort occupations. A concerted effort will be made to obtain a large sample of faunal materials. In addition, a minimum 2 liter flotation sample will be collected from each site feature and analyzed for botanical/faunal remains too small to be recovered in the screens. If possible, faunal remains will be identified to species and element, age of individuals, minimum number of individuals, indications of unique butchering patterns, and patterns of habitat exploitation (seasonality). Faunal recoveries will be size graded (25 mm, 13 mm, 6 mm, and 3 mm). This analysis is, of course, contingent on the recovery of a substantial, well-preserved, and diversified sample.

Curation. Upon completion of the project all artifacts recovered will be curated at a location agreed upon by the landowner and the NOD-COE. Packaging and cataloging procedures will follow the guidelines for curation established by the curatorial facility. All photographs, field notes, field forms, and computer data generated during the course of this project will be delivered to the NOD-COE, in a mutually agreed upon format, upon acceptance of the final project report.

Report Preparation. This report will be appended to the *Final Report of Cultural Resource Investigations Within the U.S. Army Corps of Engineers New Orleans to Venice Hurricane Protection Project*. Copies of the report will be provided to the landowner, the Fort Jackson Museum, and the Plaquemines Parish Commission. This report will follow the NOD-COE reporting requirements guidelines for cultural resource investigations. The report will include an evaluation of the data recovery at the Fort, recommendations for construction of the protective levee, and any recommendations for Phase II data recovery.

III. PROJECT SCHEDULE AND DELIVERY REQUIREMENTS

PERSONNEL

All personnel assigned to this project will be made aware of the scope of the project, the exact work to be performed, the specifications and format to be followed, and the specific responsibilities of each participant. All laboratories and consultants used on this project will also conform to federal requirements. All consultants will be approved by the NOD-COE. Personnel in supervisory and consultant positions must have qualifications that satisfy or exceed the requirements specified in 36CFR66, Appendix C and the Secretary of the Interior's Standards and Guidelines (48FR44738). The project archeologist will meet or exceed the requirements for historical archeologists.

TIMETABLE

The tasks discussed within this proposal will be conducted within the following time frame. The starting date for fieldwork will be determined by the NOD-COE. Field and laboratory work will be conducted over an eight week period upon notification to proceed by the NOD-COE. Two months (8 weeks) are scheduled for the completion of a draft final Phase I Report. The report will incorporate the results of historical research and field and laboratory analyses of data recovered from Fort St. Philip. If additional Phase II work is determined necessary then recommendations will be made in Phase I for the completion of compliance work at Fort St. Philip. If no additional work is deemed necessary, then the report will contain adequate information and justifications for these recommendations. The NOD-COE will evaluate the draft final and provide review comments to the contractor within one month (4 weeks) after submittal. All revisions will be made within one month after receipt of the NOD-COE review comments.

REPORT PREPARATION

The reporting standards will follow the guidelines established for cultural resource investigations in Appendix A of the *Final Report of Cultural Resource Investigations Within the U.S. Army Corps of Engineers New Orleans to Venice Hurricane Protection Project*. Six copies of the draft report will be submitted to the NOD-COE for review. Upon review and approval of the draft final, forty final copies and a reproducible master copy will be submitted to the NOD-COE.



**US Army Corps
of Engineers**

New Orleans District

Cultural Resources Series

Report Number: COELMP/PD-87-04

**FINAL REPORT OF CULTURAL RESOURCE INVESTIGATIONS
WITHIN THE U.S. ARMY CORPS OF ENGINEERS NEW ORLEANS TO VENICE
HURRICANE PROTECTION PROJECT**

**ANNEX C: RECOMMENDATIONS FOR FORT DE LA BOULAYE
(16PL27) PLAQUEMINES PARISH, LOUISIANA**

Final Report
December 1988

Agency for Conservation Archaeology
Eastern New Mexico University
Portales, New Mexico

Prepared for
U.S. Army Corps of Engineers
New Orleans District
P.O. Box 60267
New Orleans, LA 70160-0267

Distribution Unlimited

**FINAL REPORT OF CULTURAL RESOURCE INVESTIGATIONS
WITHIN THE U.S. ARMY CORPS OF ENGINEERS NEW ORLEANS TO VENICE
HURRICANE PROTECTION PROJECT**

**ANNEX C: RECOMMENDATIONS FOR FORT DE LA BOULAYE, (16PL27),
PLAQUEMINES PARISH, LOUISIANA**

By

**John L. Montgomery, Keith Landreth, Joan Exnicios
Kathleen Bowman, and James Bowman**

**John L. Montgomery, Ph.D.
Principal Investigator**

Final

December 1988

**Prepared for the Department of the Army, New Orleans District, Corps
of Engineers, P.O. Box 60267, New Orleans, Louisiana 70160, Under
Delivery Order No. 0001, Contract No. DACW29-86-D-0094**

**Agency for Conservation Archaeology
Eastern New Mexico University
Portales, New Mexico**

TABLE OF CONTENTS

	Page
LIST OF FIGURES	C-iii
INTRODUCTION	C-1
HISTORICAL BACKGROUND.	C-1
MONITORING REQUIREMENTS.. . . .	C-5
<i>Personnel.</i>	C-5
<i>Report Preparation</i>	C-5

LIST OF FIGURES

Figure		Page
C-1.	Original site map for Fort de la Boulaye	C-2
C-2.	Area recommended for monitoring in the vicinity of Fort de la Boulaye (16PL27).	C-4

INTRODUCTION

Fort de la Boulaye is a National Historic Landmark. It was reportedly located on the east bank of the Mississippi River, 0.5 km north of the town of Phoenix along the Joe Gravolet Canal (Figure C-1). In the 1930s, when the Gravolet Canal was excavated, the dredge pulled up a few hewn timbers purportedly associated with the Fort. Based on these remains and other historical data, this site was identified as the remains of the earliest French fort in the Mississippi Valley, Fort du Mississippi (aka. Fort de la Boulaye).

HISTORICAL BACKGROUND

Following is a brief historical sketch of Fort de la Boulaye. For more detailed information, the reader is encouraged to read Jeter and Goodwin (1986), a report on the latest of many attempts to locate the Fort.

After Sieur de Bienville's encounter with an English warship in a bend of the Mississippi now known as "English Turn" in September 1699, the need for a French military outpost in the lower Mississippi became clearly evident. In his report to the French Minister of Marine, Bienville's brother, Iberville, asserted that the English Captain Banks threatened Bienville that he would soon return with warships light enough to enter the river and establish a colony along the bank. Iberville concluded his report by stressing the need for some manner of fortification on the lower river (Ries 1936:842).

Upon his return to the lower Mississippi in the winter of 1699, Iberville joined Bienville at a site selected by the latter for the construction of a fortification on the east bank 18 leagues above the mouth of the river (Favrot 1943:726). Apparently Bienville selected this site on the advice of a Bayougoula Indian who assured him that the location was on a ridge that never flooded (Ries 1936:843). The availability of oak, elm, ash, and cypress trees may have also influenced the site selection.

Construction began on what was to become Fort du Mississippi (Fort de la Boulaye) on February 1, 1700. Although called a fort, technically the site was not a fort at all but merely a two story blockhouse with several adjoining structures (Robinson 1977:18). Pierre Gravier, who arrived at the Fort on December 17, 1700, gave his description of the site:

there is no fort nor bastion, entrenchment or redoubt; all consists of a battery of six guns (six and eight pounders) planted on the brow of the bluff, and five or six cabins separated from each other and covered with palm leaves. They have been four months in water even though Indians assured them that it did not flood [Ries 1936:853].

Cypress logs were also used to construct a large powder magazine, which was covered with 1-1/2 feet of mud.

The cannons apparently were placed in the blockhouse, which Bienville also used as his residence. Originally Iberville intended to fortify the site with four four-pound cannon and two eighteen-pound cannon. Yet apparently all cannons at the site were six and eight pounders (Casey 1983:29).

Bienville was placed in command of the Fort until 1702. A letter, dated September 6, 1704, from Bienville to the Minister of Marine (Pontchartrain) asserts that Lt. Denis was in command of the site with 15 men. The Fort was occupied officially until 1707 and unofficially for several years thereafter. The site was used as a gathering spot for troops as late as 1715 (Ries 1936:857).

The importance of Fort de la Boulaye should not be underestimated. It served not only as the first fortification but also as the first European settlement in the present state of Louisiana. The effect of this Fort was to secure Louisiana for France, and prevent the English from seizing the lower Mississippi. In addition, the occupation of the Fort marked the turning point in the history of the lower Mississippi from exploration to colonization.

The purported location of the Fort was adjacent to the proposed impact area of the NOV. An intensive field program and research effort was conducted to locate and define the Fort boundaries. Two recent reports, one a locational study by Coastal Environments, Inc. (1983), the other a testing project, by Goodwin and Associates (Jeter and Goodwin 1986) have suggested that the Gravolet Canal Locality was not the location of the Fort. Jeter and Goodwin (1986) recommended that this locale be delisted from the National Landmark listings.

On the basis of the summary and recommendations presented by Jeter and Goodwin (1986), it would appear that while the actual remains of the Fort could not be located, there exists little possibility of an impact to the site by the proposed levee expansion project along the Joe Gravolet Canal. However, it was recommended that construction activity be monitored in this area. It is our recommendation also that the levee construction in this area be monitored by a professional archeologist. Figure C-2 illustrates the area recommended for monitoring.

Should cultural materials associated with the Fort be located during monitoring of the levee enlargement then activity should cease in this area and emergency consultation initiated with the Louisiana SHPO. If no remains are located during monitoring then it will be recommended to NPS that the Gravolet Canal Locality be delisted as a National Historic Landmark. A relisting effort should be undertaken if the Fort is found by subsequent research activities.

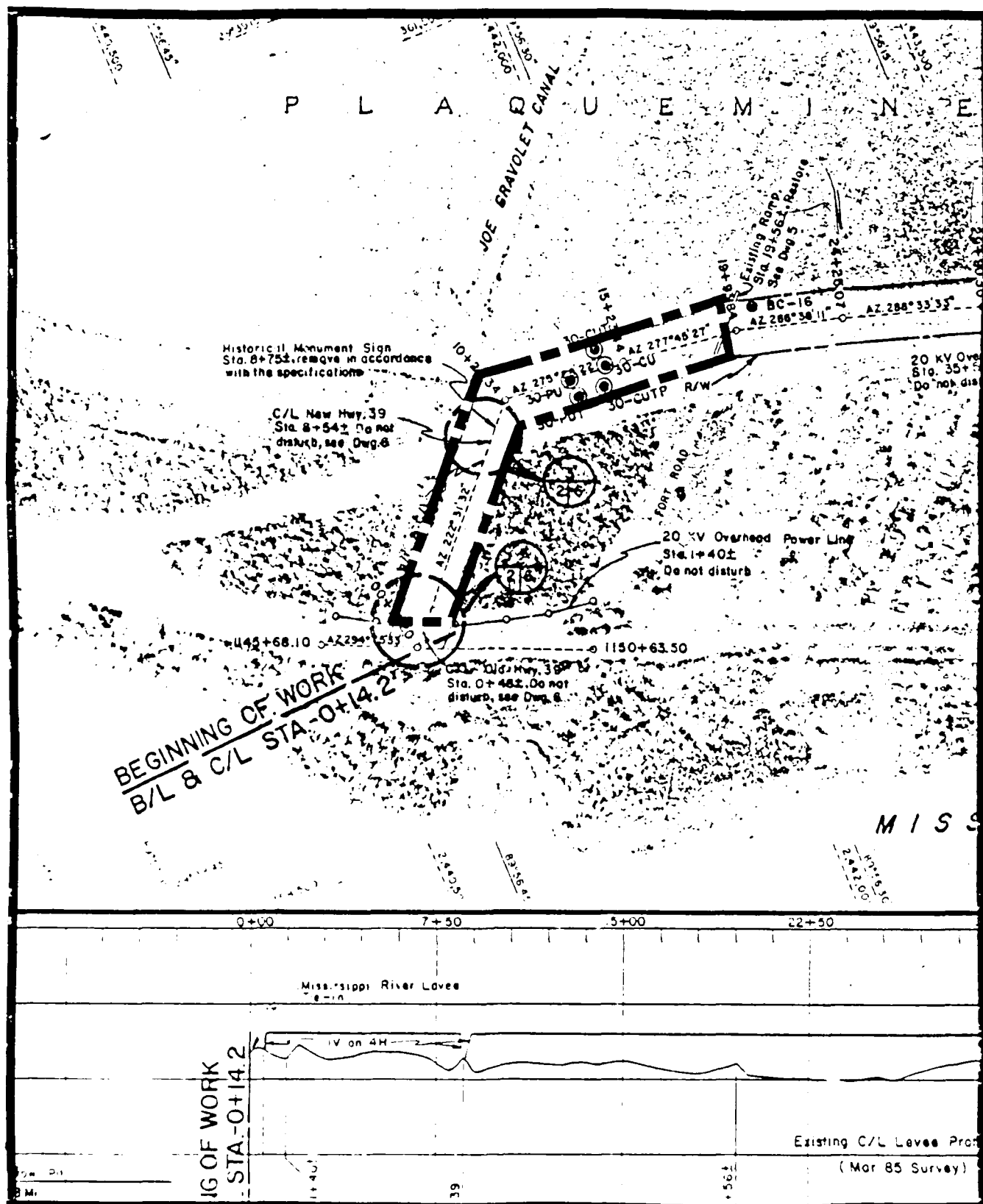


Figure C-2. Area recommended for monitoring in the vicinity of Fort de la Boulaye (16PL27).

MONITORING REQUIREMENTS

Personnel

All personnel assigned to monitoring will be familiar with all background data on the Fort and will be oriented as to the total scope of the project, the exact location of the monitoring site, and the dates of levee enlargement activity at this location. The project archeologist must conform to the appropriate Federal requirements for historical archeologist. All personnel will be approved by the NOD-COE before monitoring begins.

Report Preparation

The monitoring report will be combined into a single document that will be appended to the *Final Report of Cultural Resource Investigations Within the U.S. Army Corps of Engineers New Orleans to Venice Hurricane Protection Project*. The reporting standards will follow the NOD-COE guidelines established for cultural resource investigations in Appendix A of the NOV. Six copies of the draft monitoring report will be submitted to the NOD-COE for review. Upon review and approval of the draft final, forty final copies and a reproducible master copy will be submitted to the NOD-COE.



**US Army Corps
of Engineers**

New Orleans District

Cultural Resources Series
Report Number: COELMP/PD-87-04

**FINAL REPORT OF CULTURAL RESOURCE INVESTIGATIONS
WITHIN THE U.S. ARMY CORPS OF ENGINEERS NEW ORLEANS TO VENICE
HURRICANE PROTECTION PROJECT**

**ANNEX D: RESEARCH DESIGN FOR PHASE 1 MITIGATION OF OLGA (16PL61),
OSTRICA (16PL66), DUNN'S CAMP (16PL82), AND ADOLPH'S CAMP (16PL80),
PLAQUEMINES PARISH, LOUISIANA**

Final Report
December 1988

Agency for Conservation Archaeology
Eastern New Mexico University
Portales, New Mexico

Prepared for
U.S. Army Corps of Engineers
New Orleans District
P.O. Box 60267
New Orleans, LA 70160-0267

Distribution Unlimited

**FINAL REPORT OF CULTURAL RESOURCE INVESTIGATIONS
WITHIN THE U.S. ARMY CORPS OF ENGINEERS NEW ORLEANS TO VENICE
HURRICANE PROTECTION PROJECT**

**ANNEX D: RESEARCH DESIGN FOR PHASE 1 MITIGATION
OF OLGA (16PL61), OSTRICA (16PL66),
DUNN'S CAMP (16PL82), AND ADOLPH'S CAMP (16PL80),
PLAQUEMINES PARISH, LOUISIANA**

By

**John L. Montgomery, Keith Landreth, Joan Exnicios
Kathleen Bowman, and James Bowman**

**John L. Montgomery, Ph.D.
Principal Investigator**

Final

December 1988

**Prepared for the Department of the Army, New Orleans District, Corps
of Engineers, P.O. Box 60267, New Orleans, Louisiana 70160, Under
Delivery Order No. 0001, Contract No. DACW29-86-D-0094**

**Agency for Conservation Archaeology
Eastern New Mexico University
Portales, New Mexico**

TABLE OF CONTENTS

	Page
LIST OF FIGURES	D-iv
I. INTRODUCTION.	D-1
MITIGATION PROCESS.	D-3
RESEARCH DESIGNS IN ARCHEOLOGY.	D-4
PRACTICAL AND THEORETICAL SIGNIFICANCE.	D-5
THEORETICAL BASIS FOR THE PROPOSED INVESTIGATIONS	D-5
ANTICIPATED GAINS IN CULTURAL RESOURCE KNOWLEDGE	D-6
SIGNIFICANCE OF THE INVESTIGATION.	D-6
<i>Practical Social Implications</i>	D-6
<i>Management Significance.</i>	D-7
<i>Specific Research Goals</i>	D-7
II. RESEARCH DESIGN FOR PHASE I MITIGATION OF OLGA (16PL61), PLAQUEMINES PARISH, LOUISIANA	D-8
HISTORICAL BACKGROUND.	D-8
SITE DESCRIPTION	D-8
RESEARCH DESIGN	D-11
<i>Statement of Specific Research Goals.</i>	D-11
<i>Specifications of Research Operations.</i>	D-11
<i>Archeological Aspect.</i>	D-17
III. RESEARCH DESIGN FOR PHASE I MITIGATION OF ORICA (16PL66), PLAQUEMINES PARISH, LOUISIANA	D-24
HISTORICAL BACKGROUND.	D-24
SITE DESCRIPTION	D-24
RESEARCH DESIGN	D-27
<i>Statement of Specific Research Goals.</i>	D-27
<i>Specifications of Research Operations</i>	D-28
<i>Archeological Aspect.</i>	D-33
IV. RESEARCH DESIGN FOR PHASE I MITIGATION OF DUNN'S CAMP (16PL82), PLAQUEMINES PARISH, LOUISIANA	D-39
HISTORICAL BACKGROUND.	D-39
RESEARCH DESIGN	D-39
<i>Statement of Specific Research Goals.</i>	D-39
<i>Specifications of Research Operations.</i>	D-42
<i>Archeological Aspect.</i>	D-46
V. RESEARCH DESIGN FOR PHASE I MITIGATION OF ADOLPH'S CAMP (16PL80), PLAQUEMINES PARISH, LOUISIANA	D-52
HISTORICAL BACKGROUND.	D-52
RESEARCH DESIGN.	D-52
<i>Statement of Specific Research Goals.</i>	D-52

CONTENTS

Page

<i>Specifications of Research Operations</i>	D-55
<i>Archeological Aspect.</i>	D-58

VI. PROJECT SCHEDULE AND DELIVERY

REQUIREMENTS.	D-63
PERSONNEL.	D-63
TIMETABLE.	D-63
REPORT PREPARATION.	D-63

LIST OF FIGURES

Figure	Page
D-1. Map showing the location of Olga (16PL61), Ostrica (16PL66), Adolph's Camp (16PL80), and Dunn's Camp (16PL82)	D-2
D-2. Aerial photographs of Olga (16PL61)	D-9
D-3. Sketch map of Olga (16PL61).	D-10
D-4. Excerpt of 1868 Mississippi River Commission Map showing Olga (16PL61)	D-12
D-5. Diagram of process applied to Research Goal 1 at Olga (16PL61).	D-13
D-6. Diagram of process applied to Research Goal 2 at Olga (16PL61).	D-14
D-7. Diagram of process applied to Research Goal 3 at Olga (16PL61).	D-15
D-8. Sketch map of Ostrica (16PL66)	D-25
D-9. Aerial photographs of Ostrica (16PL66)	D-26
D-10. Diagram of process applied to Research Goal 1 at Ostrica (16PL66).	D-29
D-11. Diagram of process applied to Research Goal 2 at Ostrica (16PL66).	D-30
D-12. Diagram of process applied to Research Goal 3 at Ostrica (16PL66).	D-31
D-13. Diagram of process applied to Research Goal 4 at Ostrica (16PL66).	D-32
D-14. Excerpt of 1868 Mississippi River Commission Map showing Dunn's Camp (16PL82)	D-40
D-15. Aerial photographs of Dunn's Camp (16PL82)	D-41
D-16. Diagram of process applied to Research Goal 1 at Dunn's Camp (16PL82).	D-43
D-17. Diagram of process applied to Research Goal 2 at Dunn's Camp (16PL82).	D-44

Figure		Page
D-18.	Diagram of process applied to Research Goal 3 at Dunn's Camp (16PL82).	D-45
D-19.	Excerpt of 1868 Mississippi River Commission Map showing Adolph's Camp (16PL80)	D-53
D-20.	Aerial photographs of Adolph's Camp (16PL80).	D-54
D-21.	Diagram of process applied to Research Goal 1 at Adolph's Camp (16PL80)	D-56
D-22.	Diagram of process applied to Research Goal 2 at Adolph's Camp (16PL80)	D-57

I. INTRODUCTION

The U.S. Army Corps of Engineers, New Orleans District (NOD-COE) is proposing to construct a hurricane protection levee along the east bank of the Mississippi River from Bohemia to Baptiste Collette Bayou, in Plaquemines Parish, Louisiana. This project, known as the East Bank Barrier Levee, is part of five interrelated hurricane protection levee projects known collectively as the New Orleans to Venice Hurricane Protection Project (NOV). At the present time the decision to construct the East Bank Barrier Levee has been cancelled. If constructed, the East Bank Barrier Levee will directly impact portions of four cultural resource sites: Olga, (16PL61), Ostrica (16PL66), Dunn's Camp (16PL82), and Adolph's Camp (16PL80) (Figure D-1). These sites have been evaluated as eligible for the National Register of Historic Places (NRHP) in the *Final Report of Cultural Resource Investigations Within the U.S. Army Corps of Engineers New Orleans to Venice Hurricane Protection Project* (this volume). Ostrica and Olga are late nineteenth century Yugoslavian fishing villages and oyster processing areas. Dunn's Camp is the remains of a nineteenth century shipbuilders home and shop. Adolph's Camp is a Swedish single family fishing settlement.

The research designs presented in this annex are proposed as a means of mitigating adverse impacts to the sites in lieu of other mitigative measures. While these research designs are intended to be as flexible as possible to accommodate contingencies in fieldwork and analysis, the framework provided for the proposed investigations is comprehensive. The research designs identify the research orientation of the proposed investigations; the problem areas to be addressed within the scope of the study; the methodological approaches to be used during fieldwork and analysis; and the specifications concerning report preparation, scheduling and curation. The purpose of the proposed investigations is to collect information significant to the history of Plaquemines Parish, as well as Louisiana in general, before such information is destroyed by land-altering activities of the NOV.

The option to conduct data recovery operations for the purpose of mitigating potential impacts to these sites was determined to be the preferred plan of action by the NOD-COE. Prior locational studies conducted by the agency in conjunction with the projected cost of relocating and possibly redesigning the proposed levee warranted against consideration of the avoidance option. Therefore the research designs that follow are considered to be the preferred treatments for arriving at a finding of "No Adverse Effect" within the context of the proposed undertaking.

At this stage of the project, a Phase I mitigation program will be required if the decision is made to construct the East Bank Barrier Levee. A description of the Phase I process is provided below as the final part of the mitigation process.

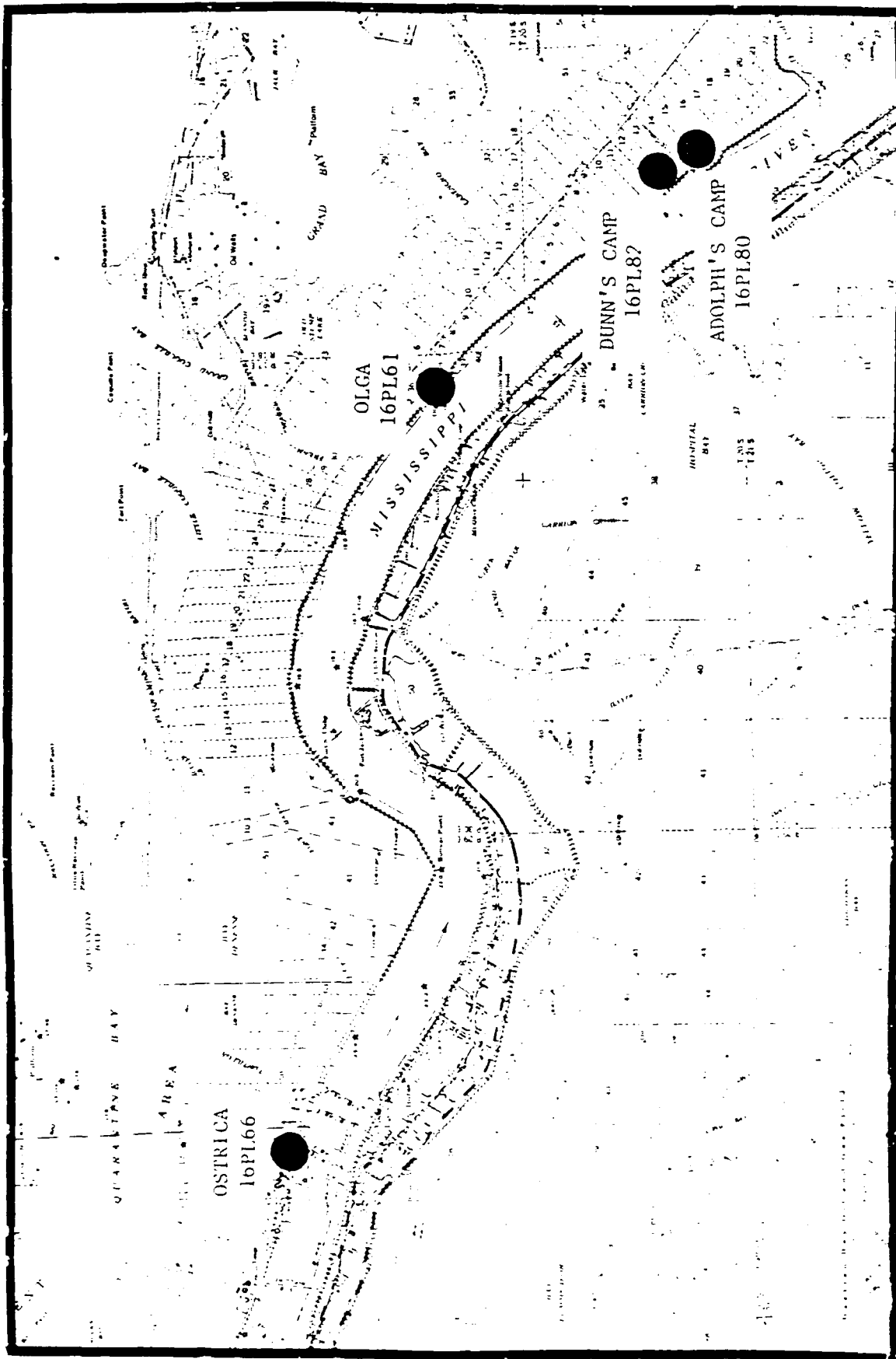


Figure D-1. Location of Olga (16PL61), Ostrica (16PL66), Adolph's Camp (16PL80), and Dunn's Camp (16PL87). Composite map from USGS Venice and Empire Quadrangles, 15 minute series, reduced to 65% of original size.

MITIGATION PROCESS

All sites determined eligible on the basis of criterion 36CFR60.6(d) will be subjected to the following two-phase mitigation program. When this mitigation program is agreed to by the Louisiana State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation (ACHP) will be notified. If consensus does not exist between the NOD-COE and the SHPO, comments will be sought from the ACHP in accordance with 36CFR800.

The mitigation process consist of two phases, termed Phase I and Phase II. Results of the Phase I program determine if a Phase II program is required. This two phase scheme is used to provide the most flexible and comprehensive mitigation approach to the significant cultural resources affected by the NOV.

Phase I.

- a. A research design will be written that includes the essential elements of investigation and addresses each site to be considered, what will be done to the site, why it will be done, and what the anticipated gains are. This part defines the questions to be asked and states how they will be addressed and answered.
- b. Institute partial data recovery from all sites. Partial data recovery will include formal testing (of not more than 50% of the site) with professional control and care in accordance with the methodology specified and questions posed in the research design. Other types of site features may require other partial data recovery techniques (e.g., mapping, engineering or architectural diagrams, etc.) Partial data recovery is specifically designed to answer the questions posed in the research design.
- c. Evaluate all information recovered from partial data recovery phase.
- d. Write a professional report on the partial data recovery phase that includes a determination of whether the partial data recovery constitutes adequate data recovery for each site considered. For all sites from which adequate data have been recovered, no further work is required and the partial data recovery will constitute adequate mitigation.
- e. Consultation with the SHPO will indicate concurrence or nonconcurrence with the NOD-COE's recommendations concerning the adequacy of Phase I mitigation and the requirement for Phase II.
- f. For areas or sites where the SHPO concurs that Phase I efforts constitute adequate mitigation, the agency official may issue authorization to proceed and the ACHP will be notified.

- g. For all areas or sites where the SHPO does not concur with Phase I determinations or Phase II recommendations, procedures specified in 36CFR800 will be instituted to obtain the comments of the ACHP.

Phase II.

- a. Refine research design in light of information obtained in Phase I to address the sites to be considered during Phase II.
- b. Continue work on only those sites of exceptional importance.
- c. Complete work and write professional report.
- d. Seek SHPO concurrence that the completion of Phase II constitutes adequate mitigation for all sites considered during Phase II.
- e. For all areas or sites where the SHPO does not concur, procedures specified in 36CFR800 will be instituted to obtain the comments of the Council.
- f. For all areas or sites where SHPO concurs or 36CFR800 procedures are complete, the agency official may issue authorization to proceed and the Council will be notified. The Keeper of the National Register will also be notified that sites addressed during Phase II are no longer eligible.

With the completion of Phase I and Phase II, requirements for eligibility determinations, SHPO consultations, mitigation, criteria of effect and adverse effect application, Keeper consultation, impact assessment, research designs, and ACHP consultation are complete for all "not avoided sites."

RESEARCH DESIGNS IN ARCHEOLOGY

A research design is a "set(s) of instructions or strategies of investigation that clarify the goals and guide the research procedures of research projects" (Gibbon 1984:60). As such, the research design: 1) focuses the research goals by identifying the questions that archeologists want to answer; 2) determines which goals and procedures will most economically, effectively and objectively answer the research questions; and 3) identifies the appropriate sampling methods and standardized collection and excavation procedures to control for potential extraneous variables that could negatively affect a research project (see Gibbon 1984:60-66). Research designs are guides that provide best estimates of research goals and procedures as well as a means to evaluate the success of a particular research project.

Taking what is known about archeological method and theory, the present research designs are both site-specific and general. Goodyear et al. (1978) provide a realistic glimpse of the research design dilemma in contemporary archeology:

The most critical needs in current research programs are varieties of research designs that enable

investigators to work from the onset in a problem-oriented manner and within a number of diverse contexts. At this point there seem to be two basic strategies evolving in CRM for design development. The most common approach is to develop problems, hypotheses, and relevant methods specific to a project as it goes through its various stages. A second, but less common strategy, is the formulation of broad, standing research designs that may be created independently of any one project (1978:162).

The research designs presented below are syntheses of both approaches. Problems, hypotheses, and methodologies are oriented to a specific site; however, these are derived from, and contribute to, larger regional research questions.

PRACTICAL AND THEORETICAL SIGNIFICANCE

Efficient and effective mitigation programs require certain kinds of information at specific points in time. In a larger regional context, potential points of theoretical significance for Olga (16PL61), Ostrica (16PL66), Dunn's Camp (16PL82), and Adolph's Camp (16PL80) can be defined from the start so that the most appropriate field methods are used. The regional overview and syntheses presented in the *Final Report of Cultural Resource Investigations Within the U.S. Army Corps of Engineers New Orleans to Venice Hurricane Protection Project* certainly help structure the research goals and investigative methodologies. At the site-specific level, the proposed investigations will address research questions for broad scale anthropological comparisons. At the practical level these investigations will assist in the future refinement of evaluation and research techniques at similar types of sites.

THEORETICAL BASIS FOR THE PROPOSED INVESTIGATIONS

As Binford (1964) and many others have pointed out, a regional orientation is necessary to study most fully any cultural resource. The proposed research designs are site-specific yet regionally-oriented. Such an orientation provides the professional community a comparative database from which to evaluate the comprehensiveness of the proposed investigations and the results. This orientation also allows the NOD-COE, SHPO, and ACHP an effective means for reviewing the proposed investigations in terms of management processes. However, the theoretical basis for these research designs goes much further.

A unifying feature of the discipline of anthropology is its major theoretical goal: to explain cultural similarities and differences. Archeology, as a subdiscipline of anthropology, extends this premise into the prehistoric and historic past. The sites for which mitigation is proposed are evaluated as significant sites in terms of regional history. At these locations, this premise of anthropology can be carefully studied and significant theoretical contributions can be made to studies of settlement patterning and acculturation during the historic period.

To approach these theoretical issues in an effective manner, an interdisciplinary approach is focused on a series of fundamental problem domains. These problem domains can, in turn, be separated into a series of research questions to be evaluated by fieldwork, planning, data gathering, data analysis, and interpretation. These research questions and evaluation methods are presented herein for each of the four sites.

ANTICIPATED GAINS IN CULTURAL RESOURCE KNOWLEDGE

An explicitly stated interdisciplinary research approach to the mitigation of Olga (16PL61), Ostrica (16PL66), Dunn's Camp (16PL82), and Adolph's Camp (16PL80) will produce gains in cultural resource knowledge. These factors also will generate, or at least potentially generate, further substantial research work aimed at testing many hypotheses about cultural processes in southern Louisiana. Another anticipated gain will be found in the continued refinement of methods to evaluate the cultural resource categories under investigation. The proposed research will be used to further refine a matrix of probable research questions (and possibly add new ones) that may or may not be answered from these specific cultural resources. This in turn will refine research and recording techniques and eliminate potentially redundant or inappropriate information. This approach focuses attention on the fact that testable hypotheses can and should be identified before fieldwork begins. It is an explicitly scientific approach to cultural resource management.

SIGNIFICANCE OF THE INVESTIGATIONS

Practical Social Implications

Contemporary cultural resource management is based on legislation and general public awareness and concern for significant sites and events. This awareness and concern is often translated into scientific terms. Unfortunately, such results are much less often translated into terms readily understood by the public. It is doubly unfortunate because the public supports this research to identify, evaluate, and preserve important cultural resources that otherwise would be lost or destroyed. There is, then, a need to identify how the public can gain from the proposed investigations at these sites.

From the perspective of social importance, it is fundamental to recognize that cultural resources are nonrenewable. If destroyed, the information about the past can never be accurately reconstructed. Perhaps more to the point, the public must recognize and support the need for historic preservation. To do this with any success, there must be a way to identify what is important enough to be saved.

The significance of the proposed investigations is to focus the public-supported effort of preservation on those cultural resources that can provide significant information about the region's historic past. For many area residents, a knowledge of their ethnic origins is both important and informative. Certainly for this region, where ethnic diversity permeates the current social situation, a knowledge of one's ethnic origins is fundamentally important. Research oriented towards the evaluation of ethnic origins and diversity is an integral part of the proposed investigations at three of the four sites proposed for Phase I

mitigation. The fourth site is an early industrial complex associated with nineteenth century shipbuilding, also a significant and publicly recognized theme in the history of the area.

Management Significance

A comprehensive, site-oriented research design is a scientific research tool as well as a management tool. Particularly for management concerns, the research design provides a means for cost-effective planning as well as consistent evaluation of on-going activities. The research design also allows for a set of standard procedures to be followed and evaluated by professional peers and cultural resource management specialists.

Research designs are a plan of action. Inherent in this is the fact that a well thought out research design is used as a planning document. The research designs can identify how cultural resources should be approached during fieldwork and analysis, and what important research questions will be addressed during analysis. Thus, the planning aspects of a research design provide significant information to management concerns because it spells out what should be expected and how the project will be implemented, conducted, and completed. Establishing the procedures for research during the planning stage provides an effective method for positive and consistent evaluation.

Of additional significance to management concerns is the resulting refinement of research goals and questions that may be addressed at these sites. Ethnic sites and sites associated with the maritime industry of Plaquemines Parish are perhaps one of the most abundant yet least understood cultural resources in the NOV Area. The NOD-COE has a long term relationship and commitment to work in the Plaquemines Parish area. The resulting refinement of research techniques and questions for these site types will assist the NOD-COE cultural resource managers in future projects where these site types are encountered.

Specific Research Goals

The research goals, interests, and questions that can be addressed through archeological investigations at the four sites are the major focus of research. Those research questions to be addressed at each site are identified within the site specific research design. Each of the following forms chapters is a research design for one of the four National Register eligible sites. Included within these chapters is the research orientation, the problem areas to be addressed, the field and laboratory method, and a summary of report preparation, scheduling, and curative specifications. Field and laboratory methods are very similar for each site. This is because the four sites are interrelated culturally and spatially and due to the need for consistent and comparable data sets from each site. Minor differences occur due to the unique physical characteristics of a site and methods used to obtain data for site-specific research questions. These proposed investigations at four sites will collect information relevant to the history of Plaquemines Parish as well as Louisiana in general before such information is destroyed by land-altering activities.

II. RESEARCH DESIGN FOR PHASE I MITIGATION OF OLGA (16PL61). PLAQUEMINES PARISH, LOUISIANA

HISTORICAL BACKGROUND

Olga (16PL61) is located on the east bank of the Mississippi River between mile 16L and 17L. It is the location of a late nineteenth and early twentieth century village of Yugoslavian oystermen. In the early twentieth century Olga had a Post Office and a telegraph station located in the general store. The general store was known as the Jurjevich store. Olga was occupied until 1969 when the descendants of Jurjevich moved out after Hurricane Camille. In 1981 Gagliano and Castille reported the location of this site to the State Historic Preservation Office but the site was not visited (Louisiana State Site Form). Davis et al. (1981) visited the site and recorded the remains of an elevated earthen platform on which the Jurjevich Store, residence, wash house, and privy were located. According to Davis et al., the store was standing when they surveyed the area. It was reported that the residence and wash house were destroyed in 1969 by Hurricane Camille. Also in the area was the Grusich family oyster shop. Davis et al. (1981) recommended the site as not eligible for the NRHP, but the *Final Report of Cultural Resource Investigations Within the U.S. Army Corps of Engineers New Orleans to Venice Hurricane Protection Project* provided a different recommendation.

Preparation for the *Final Report of Cultural Resource Investigations Within the U.S. Army Corps of Engineers New Orleans to Venice Hurricane Protection Project* allowed ACA the chance to visit Olga. Reconnaissance of the site in March 1987 indicated that minimal alterations had occurred since the initial recording effort (Figure D-2). The site was evaluated under the National Register criteria as eligible for the NRHP on the basis of its ability to yield information on patterns of material culture, settlement, and acculturation among Yugoslavian immigrant families as well as information on the early oyster industry of Plaquemines Parish.

SITE DEFINITION

Davis et al. (1981:158) divided the site into two areas designated Area A and Area B (see Figure D-3). Area A is predominately marsh. An earthen platform is located on higher ground. This platform measures 45 m by 75 m (Davis et al. 1981:158). The Jurjevich store, residence, wash house, and a privy were located on top of the earthen platform. The store is the only structure that remained standing after Hurricane Camille struck in 1969. Only the cement foundations of the residence, the privy, and wash house now remain. The Jurjevich house was a "white single-story wood frame structure facing the river" and may have been a creole style structure (Davis et al. 1981:158). The general store was a wooden rectangular structure. The son of Steven Jurjevich, the original occupant of the site, came to Louisiana in the late 19th century. Steven bought land in Olga in 1885 and opened the first store in Olga (Davis et al. 1981:160). Steven Jurjevich's store was located closer to the Valer Canal. He was forced to move his store after a boundary dispute with a



a



b

Figure D-2. Aerial photographs of Olga (16PL61): a) view of structural remains; b) general site area.

neighbor. A recent examination of the 1868 Mississippi River Commission Map indicates that a minimum of 8 structures were in the area in that year (Figure D-4).

Area B was originally owned by Thomas Grusich, an oyster fishermen, who shucked oysters and then loaded them on boats to be sent to New Orleans (Davis et al. 1981:160). Davis et al. recorded that only a cement foundation remains of the oyster shed (1981:160). Grusich later sold the property to Joseph Vela (Davis et al. 1981:160). All that is left of the first Vela occupation are the remains of the house, the pilings for a walkway, and a dock (Davis et al. 1981:160). Later John Vela, Joseph's brother, bought the house and built at least two houses on the property but both were destroyed by hurricanes. Only the third house remains are still visible (Davis et al. 1981:163).

RESEARCH DESIGN

Statement of Specific Research Goals

The purpose of the proposed investigations at Olga (16PL61) is to provide information relevant to the research goals discussed below, and in so doing mitigate adverse impacts to the site deriving from the proposed NOV land-altering activities.

1. Currently there exists no documentation on inter- or intra-site settlement patterning of Yugoslavian fishing villages. One aspect of research will be to document the intra-site settlement pattern at Olga. A comparative database exists at Ostrica (16PL66), a similar site, which will also be investigated under this project. Therefore, a potential exists for inter-site comparison and definition of a Yugoslavian settlement pattern.
2. When occupied, Olga was relatively isolated from the major trade center of New Orleans. The village store served as a supply point for this village and other smaller family settlements in the area. There exists a potential to obtain historical and archeological documentation on the macro- and micro-economic relationships of the site.
3. Olga was occupied by a single ethnic group that had limited interaction with mainstream Euroamerican culture. The artifact assemblage from Olga should reflect a relatively "pure" cultural assemblage for this site type. A potential exists to examine degrees of cultural assimilation over time at the site. Again, a comparative database to be applied to this question is present at Ostrica, a similar site, which will also be investigated during this project.

Specifications of Research Operations

In order to approach the above stated research goals, a series of interrelated research operations will need to be conducted. The results of the operations will then be synthesized in a single document oriented towards addressing the research goals. Figures D-5 through D-7 illustrate the process of the proposed research at Olga (16PL61). The research operations are defined as follows.

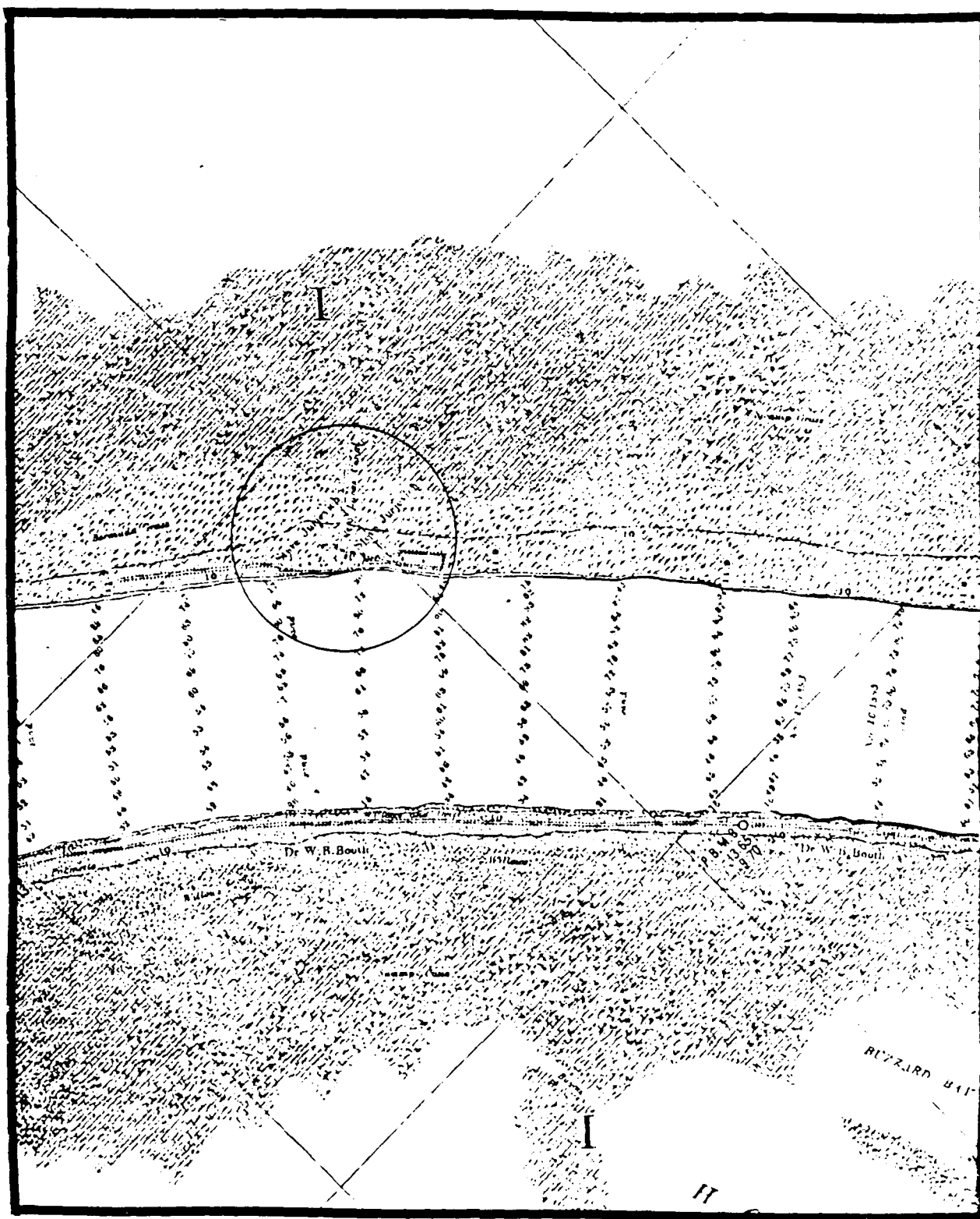


Figure D-4. Excerpt of 1868 Mississippi River Commission map showing Olga (16PL61).

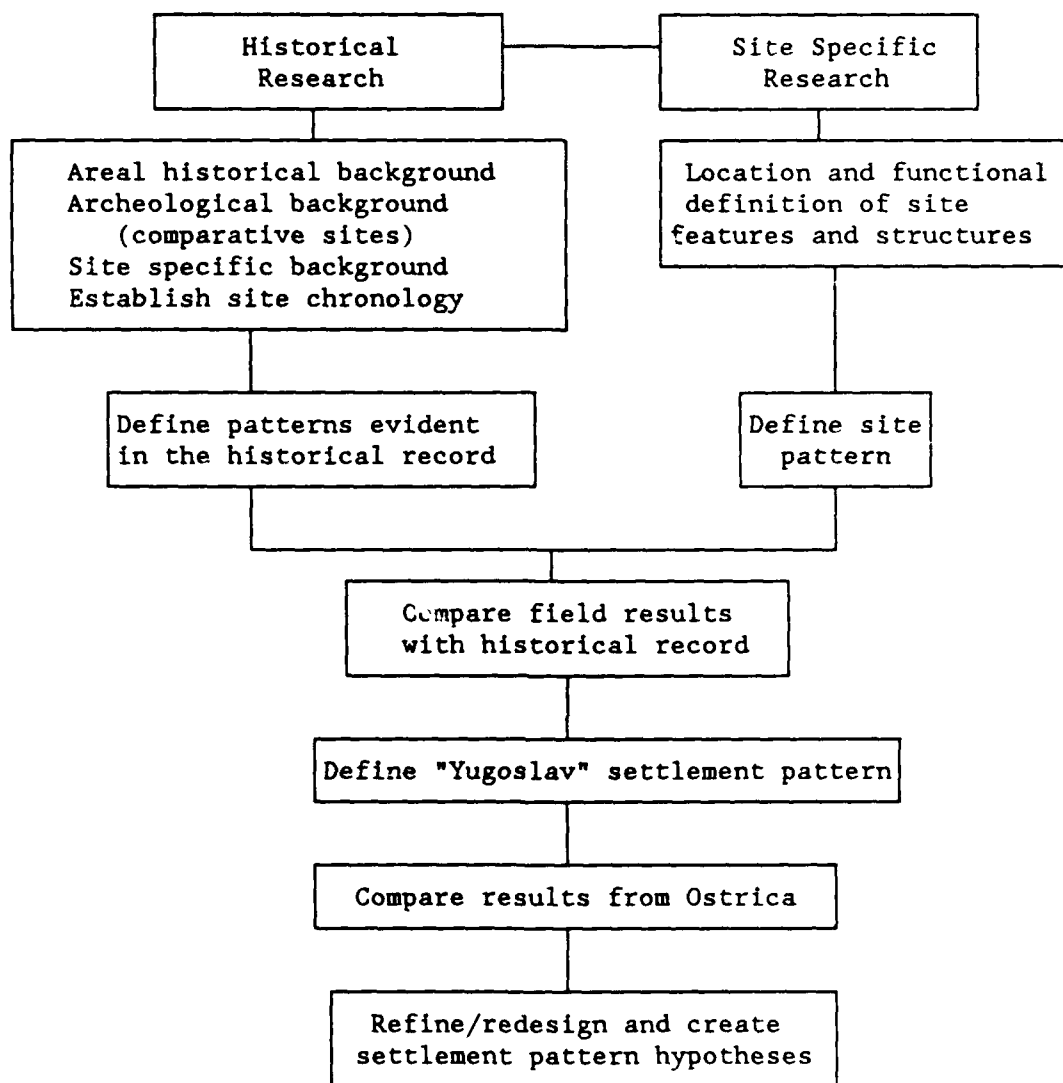


Figure D-5. Diagram of process applied to Research Goal 1 at Olga (16PL61).

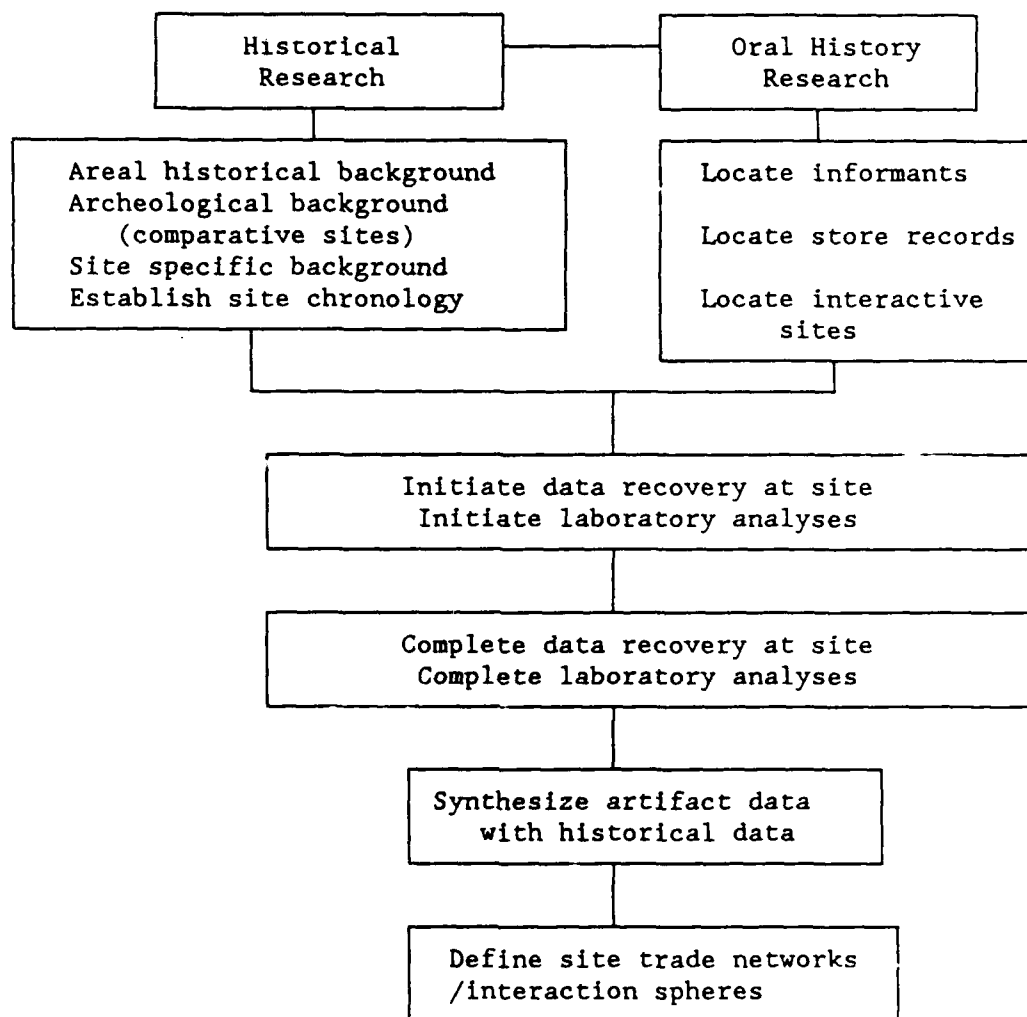


Figure D-6. Diagram of process applied to Research Goal 2 at Olga (16PL61).

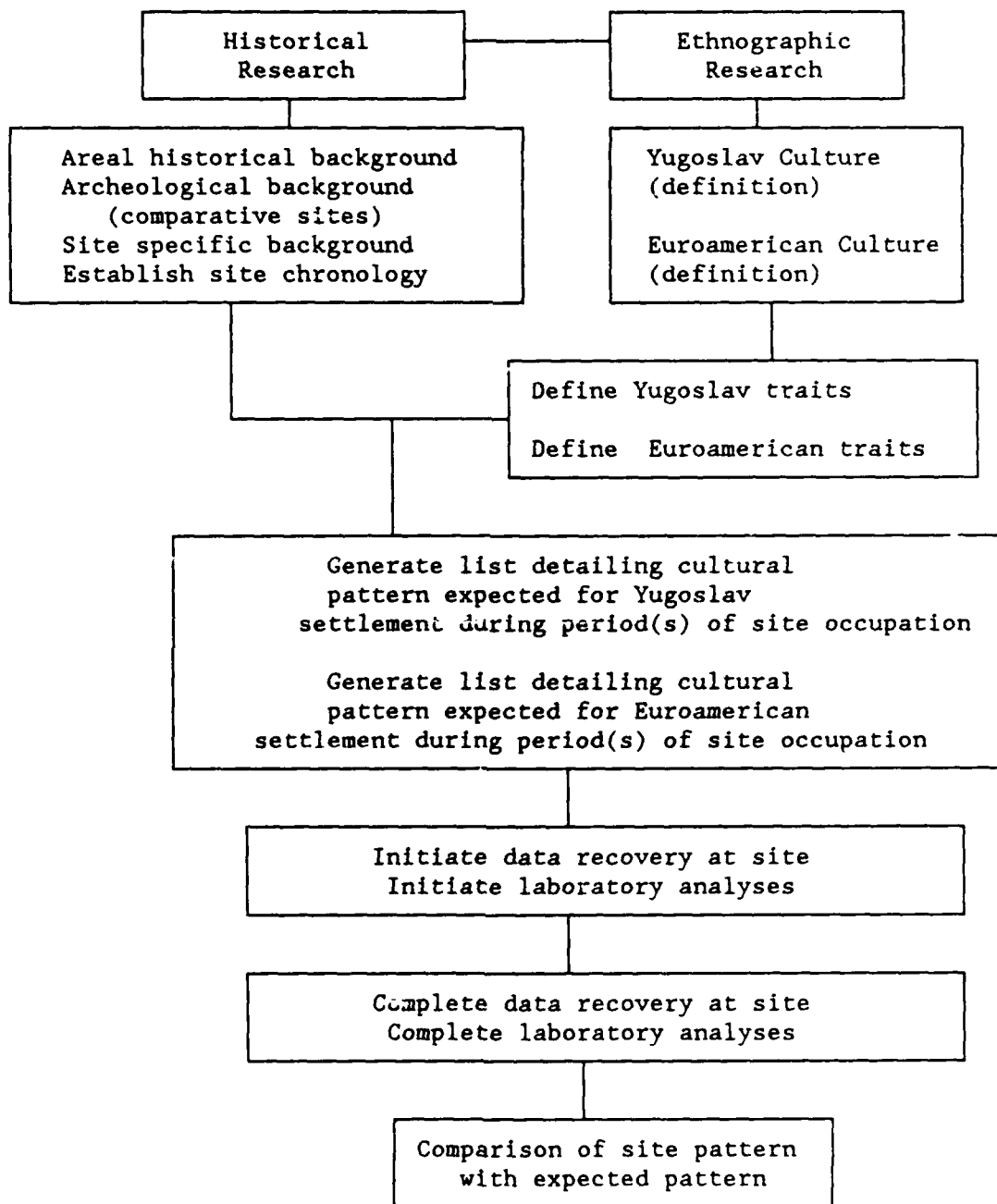


Figure D-7. Diagram of process applied to Research Goal 3 at Olga (16PL61).

Historical Research. A general historical background of Plaquemines Parish and the Yugoslavian people is provided in the main volume of this report. However, additional and more detailed historical data are required to develop a comprehensive historic context at the site-specific level. The approach will follow the general standards for creation of historical contexts in the Secretary of the Interior's Standards and Guidelines (48FR44738). The historical background will establish and document associative historical influences that occurred before, during, and immediately after the period of site occupation (ca. 1885-1969). These data will in turn be used to define and address potential historical influences on the Yugoslavian settlement in terms of site selection and site organizational processes.

Very little site-specific historical information is available from the Davis et al. (1981) survey report. Additional research needs to be conducted to determine when Olga (16PL61) was established and when it was abandoned. To accomplish this, research into U.S. Census Records, historical maps, titles, deeds, wills, conveyances etc., will need to be conducted. Three major sources of data will be used for these searches: the Plaquemines Parish Courthouse, New Orleans Notarial Archives, and the Central New Orleans Library. The census record data will provide data on Yugoslavian entry and settlement in Plaquemines Parish. Data derived from these records will include the names of heads of household, year of entry (within 10 years), place of origin, place of residence (when possible), occupation, and size of the household. These data will be searched for a period beginning in 1820 (forty years before historical documents address Yugoslavian immigration) and ending in 1920. A synthesis of these data will be used to chart the influx and spread of Yugoslavian immigrants and their descendants in Plaquemines Parish. These data will, in turn, be used to address and compare inferred settlement patterns derived from ethnographic work and that derived from the archeological remains of the site (Research Goal 1). In addition any possible store records that may be in the possession of family members or descendants of the Jurjevich store owners will be carefully examined for relevant information (Research Goal 3).

Ethnographic Research. Olga (16PL61) was first occupied by Yugoslavian immigrants in the late 1860s. This period immediately after the Civil War was a time of severe depression in Plaquemines Parish and the South in general. Even today the site area is relatively isolated from major trade centers. The immigrants may have maintained their ethnic traits and material culture patterns over a much longer period of time than those immigrating to major cities. The majority of these first immigrants were men who came over to America to find a job and home so they could later send for their families. According to one informant, Katherine Buras, many of these men did not like to marry American women (Emerson 1980:58). Those men who did marry local women attempted to quickly indoctrinate their wives into their cultural ways. A relatively intact Yugoslavian cultural pattern still exists in Plaquemines Parish. Material culture patterns of the settlement should exhibit a gradual change over time from functional and material items directly related to the parent culture to those more closely associated with an adaptation to Euroamerican culture. In addition, immigrants moving into the area would have been forced to rely heavily on area resources for subsistence with

little expenditure for items produced outside the immediate area. As the area gradually recovered from post-war depression and trade increased, a change in the group's material culture pattern should occur if the group was abandoning traditional traits and assimilating into the mainstream culture.

An ethnohistory of the site's occupants will be compiled from existing documents on Yugoslavian culture (Kane 1944; Lovrich 1967; Vujnovich 1974) and oral interviews. Research will acquire information pertinent to the definition of Yugoslavian culture during the period of site occupation and the definition of cultural patterns that may be manifested in the archeological record. An attempt will be made to locate and contact ancestors of the settlers at Olga (16PL61) and other individuals who would have knowledge of the site. Information obtained from these people would be used to define site features and structures, and to help identify of potential cultural processes behind the site settlement pattern (Research Goal 1). These data will also be used to identify potential Yugoslavian "traits" such as food and other material preferences that may exist in the archeological record. These data will then be used to compile a listing of items expected to be found on the site. This listing will be measured against materials recovered during fieldwork and then compared in the approach to Research Goal 3.

Archeological background. A search of anthropological and archeological literature will be conducted to obtain information on studies of settlement patterns at similar or comparative sites. While such efforts may not have contained the same research orientation, data applicable to research efforts at Olga (16PL61) may be derived from these reports. Additional comparative data will be derived during fieldwork and background research at Ostrica (16PL66), a similar site discussed in Chapter III.

Archeological Aspect

Fieldwork at the site will begin only after the preceding background data has been acquired. Field methods that are oriented towards the three research goals will provide data concerning functional interpretation of intra-site features, activity areas, and structures. These methods will obtain a representative sample of material culture remains from the site. Approximately 75% of the site will be directly impacted by the proposed NOV construction. Fieldwork will focus on that portion of the site directly impacted by the NOV. The recognition of cultural features, the plotting of individual artifacts, and the analysis of artifact assemblages will be important parts of the proposed research. A series of procedural steps are necessary to accomplish this goal. These are described below.

Photogrammetry/Aerial Photography. A series of maps and aerial photographs will be examined. Maps will include Mississippi River Commission survey maps as well as early plats dating to before and during the period of site occupation. Aerial photographs will also be examined. These will include NOD-COE air photographs dating to the 1930s on file at the NOD-COE engineering file room, recent NASA false-imagery photographs, and photographs taken on a reconnaissance fly-over of the project area. A series of single-scale overlays will be produced from these maps and photographs data that define the site's evolution during its period of

occupation, identify post occupational disturbances that may influence interpretations, and locate and verify prominent site structures and features.

Site survey: Pedestrian and Remote Sensing. After the preceding data are acquired, a pedestrian survey and remote sensing survey of Olga (16PL61) will be conducted to locate and mark all isolated artifacts, surface features, and structural remains. Pedestrian survey will be conducted in flagged transects at 2 meter intervals. The survey will be conducted within the previously defined site area(s) A and B (cf. Davis et al. 1981) and may extend beyond these areas if the background data has defined any potential for additional features and structural remains there. Because the site is within a depositional environment, an effort will be made to locate and recover data from sub-surface features. Specialized techniques will be used to identify sub-surface features.

Three techniques, aerial photogrammetry, soil chemistry, and magnetometer survey, will be used to locate potential sub-surface features. Aerial photographs (black and white and false imagery) will be examined for possible subsurface features indicated by topographic and vegetative anomalies.

In historical archeology the use of soil chemistry has been particularly useful in locating features. However, some types of testing, such as spot phosphate tests (cf. Eidt 1973), are inappropriate for use at Olga (16PL61). Recent soil chemistry experiments at archeological sites found in deltaic environments of the Columbia and Snake Rivers in the Pacific Northwest exhibit a high degree of phosphate contamination. Possible causes include the introduction of agricultural fertilizers in the region and upriver dumping of phosphates (Jerry R. Galm, personal communication 20 April 1987). Olga (16PL61) is situated adjacent to the Mississippi River. The constant dumping of phosphates into this river during recent historic times, combined with significant seasonal fluctuations in the water table, have in all likelihood duplicated this process, and permeated Olga (16PL61) and other sites along the river with phosphates. Additional processes at work include reflux pumping (capillary action), percolation, infiltration, and leaching created by semi-seasonal flooding and the presence of large quantities of oyster shell on the site.

Instead of spot phosphate testing, a series of soil chemicals will be analyzed at the locale to isolate those that may reflect areas containing subsurface cultural features. Chemical tests will include elements whose percentages may be altered by human activity, including magnesium, phosphorous, zinc, iron, potassium, and sodium. As a control, sediment samples will be taken upriver, downriver, and to the east of the site. One inch core test(s) will be then taken at known site features (e.g., privies, dumps, etc.). The test(s) will be taken during the first week of fieldwork. These samples will be compared to isolate a potential chemical or suite of chemicals that may indicate the presence of certain cultural features. If such a chemical signature is found to exist, then subsequent patterned tests will be systematically taken across the site to locate additional potential subsurface features and to test the utility of this methodology for use at other sites along the river.

A survey with a proton precession magnetometer will also be conducted to help locate subsurface features. The survey will be conducted prior to chemical testing to prevent possible interference from soil disturbances resulting from core testing. A control for the non-anomalous magnetic field at the site will first be established by taking 100 or more timed readings at established stations on four undisturbed locations on the site periphery. Readings will be taken at two meter intervals across the site. Two readings will be taken at each station and recorded. If extreme variation occurs between the two readings another set will be taken. A maximum ten gamma interval will be used in producing the magnetic contour map of the site. This contour map will then be used in correlation with observed anomalies created by surface features to identify potential subsurface features at the site.

Site mapping. A detailed site map incorporating topography, vegetation, surface features, isolated artifacts, and impact areas will be prepared after pedestrian survey. The site map will form the basis for structuring investigations at Olga (16PL61). The map will be constantly updated throughout the course of fieldwork. Site control will be established by placing a permanent datum at the southwest site perimeter and away from the impact area. A 10 meter interval site grid will be established. The grid will be oriented to true north and referenced to the primary datum. If possible, the primary datum and grid will be referenced to USGS grid coordinates. If this is not possible or feasible, then all grid points and measurements will be referenced to an arbitrary datum designation (such as 500 m north, 500 m east). Vertical control will be maintained through the arbitrary designation of the site primary datum as 0.0 meters. Secondary datums may be established for reference at various points within the site. All elevation points for mapping, artifacts, features, etc. will be recorded with either a transit or an EDM.

Site excavation and recordation. Following survey, mapping, and location of potential subsurface features, the next step will consist of recording the known surface features and structural remains, and testing, location, and sampling of any subsurface features. A set of standardized forms will be used to record these features at Olga (16PL61). The format of these will be mutually agreed upon by the NOD-COE and the contractor. For the purposes of consistency these forms will be used on all cultural resource sites investigated as part of this project. These forms include, but are not limited to, feature structure, excavation unit, excavation level, photographic, field notes, special samples (e.g., botanical, soil), soil, and feature profile forms. Measurements of historic features and structures will be taken in metric and English standard systems. For rapid assimilation of site information, these data will be input into the Cultural Resources Information System (CRIS) in a format mutually determined by the contractor and the NOD-COE.

Excavation. Excavations will consist of judgemental sampling of site surface features, testing and sampling of defined subsurface anomalies, and obtaining a sample of sheet refuse from Olga (16PL61). These excavations should provide data that can be used to address the stated research goals.

Site features will be sampled by obtaining material refuse within or surrounding the feature. The size of these samples will be judgementally derived and oriented towards obtaining sufficient data for functional identification of the feature or structure. In the case of a privy or dump, the feature may be excavated in halves or quartered. If the feature consists of the structural remains of a habitation or store, then sheet refuse around or within the structure will be sampled. In all cases excavations will cease when either a 50% sample of fill has been obtained or a sufficient sample for identification and interpretation has been obtained. Feature excavation will identify a feature's form and function. Excavation units will not exceed 1 x 2 meters square and excavation levels will not exceed 10 cm in depth. A concerted effort will be made to locate and sample chronologically separate disposal areas associated with the site's store and habitations. This will produce data pertinent to addressing Research Goals 2 and 3.

All excavations will be conducted in a traditional archeological manner using hand tools (shovels, trowels, etc.). All excavated fill will be screened using 1/4-in mesh hardware cloth or less. A four liter flotation sample will be taken from selected levels and control units to sample fine-fraction remains at the site. Since natural strata are difficult to discern in this environment, it may be impossible to separate potential cultural components. When appropriate, units will be excavated in contoured, arbitrary, 10 cm levels.

If well-defined natural or cultural stratigraphic units are encountered during excavation, continuing work will be conducted within these levels. Stratigraphic profiles of representative walls of each excavation unit will be drawn, unless the archeologist determines that the strata are sufficiently similar to justify drawing fewer profiles. All profiles will be drawn on metric graph paper. Profiles will be described following the style of the *Soil Survey Manual* (U.S. Department of Agriculture 1975).

Subsurface anomalies will be tested by placing a single 1 x 2 meter control unit within the anomaly center. The unit will be excavated in arbitrary 10 cm levels to sterile or until the feature boundaries are located and/or the feature is functionally defined. If sufficient information is recovered during testing to ascertain the feature function, then no further excavations will be conducted. If additional data is needed, then data from the control block will be used to guide the removal of overburden in additional units and to recover feature information. Once the feature is functionally and spatially defined, testing/excavation will cease.

A sample of sheet refuse will also be obtained from the site. Sheet refuse can determine and refine intra-site activity areas not represented by features and structures (cf. Moir 1982). A minimum of 200, 50 x 50 cm units will be excavated to culturally sterile soil in an evenly spaced grid pattern across the site to obtain a representative sample of site refuse.

Field photography. Duplicate black and white negatives and color slide photographs will be taken of Olga (16PL61) before, during, and after data recovery operations, and of all site features and structures, test

units and test unit profiles, and daily operations. Black and white negatives and contact sheets will be subjected to an archival quality wash. The photographs will be organized in a log and will contain the appropriate photo documentation form.

Laboratory analyses. In establishing the format for the laboratory analysis an initial but far reaching goal is to formulate a single analytical system that can be used in approaching, in a quantifiable manner, the stated research objectives. In so doing, the analysis must be adapted to the specific site type rather than any "formally" recognized system. An approach based on known historical activities at the locale provides a more culturally-oriented picture of the site occupation. In order to obtain daily feedback between analytical results, both field and laboratory analyses will be conducted concurrently.

Laboratory forms. A set of forms for use in analysis will be created before fieldwork begins. These forms will be designed by the contractor in consultation with the NOD-COE. Due to an anticipated large recovery of materials, all archeological data will be input into CRIS for rapid analyses. The field selection for this database will also be designed by the contractor in consultation with the NOD-COE.

Analytical procedures. The field identification and curation of artifacts will be based on a code system. Code 1 will refer to artifacts found in-situ, Code 2 artifacts denote those items found within a quadrant or level of an excavation unit or feature, Code 3 artifacts are those recovered from screening, and Code 4 refer to general surface finds at mapped locations.

Two analytical methodologies, descriptive and functional, will be used during the analyses of artifacts recovered from Olga (16PL61). Combining these analytical methodologies provides a more culturally-oriented interpretation of the site than would either a solely descriptive or functional system. Descriptive analysis will identify data relevant to the "history of the artifact", that is, its place of origin, manufacturing technology, and dates of manufacture. Data derived from descriptive analysis will be used in the determination of trade networks (Research Goal 2) and the level of technology used at the site (Research Goal 3). In combination with historical documentation, descriptive analysis can be used to differentiate socioeconomic status.

Trade networks between Olga (16PL61) and the larger region will be examined in an approach similar to that utilized by Adams (1976) and Landreth et al. (1985). They emphasize the use of manufacturing trademarks and supply networks to interpret a site's relationship to the outside world. A local informant in 1980 told Davis' crew that supplies were brought to the Olga (16PL61) store by freight boat that would come from New Orleans on Tuesdays and Fridays (Emerson 1980:55). A potential exists to extend the knowledge of trade linkages at the site through these analyses.

The second level of analysis will consist of functional identification of artifacts. Artifacts will be examined using a functional typology similar to that used by Sprague (1961), Adams (1980), and Castillo et al.

(1985). The functional analysis generates data that will help identify cultural activity areas at Olga (16PL61). Functional groupings will be derived from a synthesis of historical data on this site type and the traits listing generated during ethnographic research. Historical research and oral histories, along with the artifact analysis, will provide information that may help determine the activity areas within the site (Research Goal 1).

The socio-economic level of the inhabitants of Olga (16PL61) will be examined by using various economic scaling methods, such as, Miller's (1980) classification and economic scaling of nineteenth century ceramics and another ceramic scaling method utilized by Castille et. al. (1985) and modified by Exnicios and Pearson (1985). Ceramic vessel form and decorative techniques will also be examined for variability to determine, if possible, high status vs. low status localities within the site (see Otto 1975, 1977, 1980; Miller 1980; and Castille et al. 1985).

Faunal analyses. In historical archeology, faunal remains from sites have been examined for cultural patterns of meat processing and consumption (cf. Barber 1976; Lyman 1977; Mudan 1978; Dansie 1979; Langenwalter 1980; Gust 1982, 1983, 1984; Stapp et. al. 1984; Landreth et al. 1985). The degree to which socio-economic factors, such as ethnicity and status, influence the diet is of major concern to historical archeologists and the discipline of anthropology as a whole.

Faunal remains found at Olga (16PL61) may indicate Yugoslavian subsistence strategies. These data are pertinent to addressing Research Goal 3. As mentioned earlier, most of the Yugoslavian oystermen and their families lived on their property year round. Some historical accounts indicated that when they were not working at harvesting or processing oysters, they were fishing, hunting, and trapping to supplement their diet and income. An effort will be made to obtain a large sample of faunal materials as possible. A column sample of oyster shells from oyster processing areas will be recovered from the site and analyzed in terms of species, seasonality, and breakage patterns. A two liter flotation sample will be collected from each site feature and analyzed for microbotanical and microfaunal remains. If possible, faunal remains will be examined in terms of species and element, age of individuals, minimum number of individuals, indications of unique butchering patterns, and patterns of habitat exploitation (seasonality). Faunal recoveries will be size graded (25 mm, 13 mm, 6 mm, and 3 mm). This analysis depends on the recovery of a substantial, well-preserved, and diversified sample.

Curation. Upon completion of the project all artifacts recovered will be curated at a location specified by the NOD-COE. Packaging and cataloging procedures will follow the guidelines for curation established by the curatorial facility. All photographs, field notes, field forms, and computer data generated during this project will be delivered to the NOD-COE, in a mutually agreed upon format, upon acceptance of the final project report.

Report preparation. The report will be combined with the reports on the additional sites under investigation in this project into a single

compliance document. The report will follow the NOD-COE guidelines established for cultural resource investigations in Appendix A of the *Final Report of Cultural Resource Investigations Within the U.S. Army Corps of Engineers New Orleans to Venice Hurricane Protection Project*.

III. RESEARCH DESIGN FOR PHASE I MITIGATION OF OSTRICA (16PL66), PLAQUEMINES PARISH, LOUISIANA

HISTORICAL BACKGROUND

Ostrica (16PL66) is located on the east bank of the Mississippi River at approximately river mile 25L, along the south and north banks of the Cuselich Canal (Figure D-2). The site was a Yugoslavian fishing village and oyster processing area in the late nineteenth and early twentieth centuries.

Ostrica (16PL66) was recorded by Dave Davis of Tulane University during the cultural resources survey for the East Bank Barrier Levee Project in 1980. The site is approximately 160 meters long (along the river) and 240 meters wide, to the east (Davis et al. 1981:144) (Figure D-8). Local informants have reported that there was once a factory for shucking and canning oysters at Ostrica (16PL66). Local informants also reported that there had been raised wooden houses along the Cuselich Canal, where the oyster factory workers lived.

Reconnaissance of this site in March and April of 1987 indicated minimal alterations had occurred since the initial recording effort (Figure D-9). The site was evaluated in the *Final Report of Cultural Resource Investigations Within the U.S. Army Corps of Engineers New Orleans to Venice Hurricane Protection Project*. It is eligible for the National Register Historic Places, on the basis of its ability to yield information on patterns of material culture, settlement, and acculturation among Yugoslavian immigrant families, as well as information on the early oyster industry of Plaquemines Parish.

SITE DESCRIPTION

In the cultural resources survey for the East Bank Barrier Levee Project, Davis et al. (1981) divided Ostrica into three areas (Figure D-8): Area A, Area B, and Area C. Area A contains oyster shell middens and foundation pilings made of brick fragments embedded in cement. The density of artifacts (glass, metal, and ceramics) in Area A was the highest of the three locales. According to Davis et al. (1981:148), there was an inconsistency in that "other evidence" indicated that Area A was the factory area and not the factory workers' living area.

Area B, located north of Area A and below the Cuselich Canal, contains a shell midden, three pilings made of brick and cement, and the remains of a brick structure. This brick structure was approximately 3 m by 7 m with walls around 30 cm thick (Davis et al. 1981:148). The interior of the structure had vitrified brick walls, which probably resulted from exposure to high temperatures. Davis et al. (1981:148) inferred that the structure

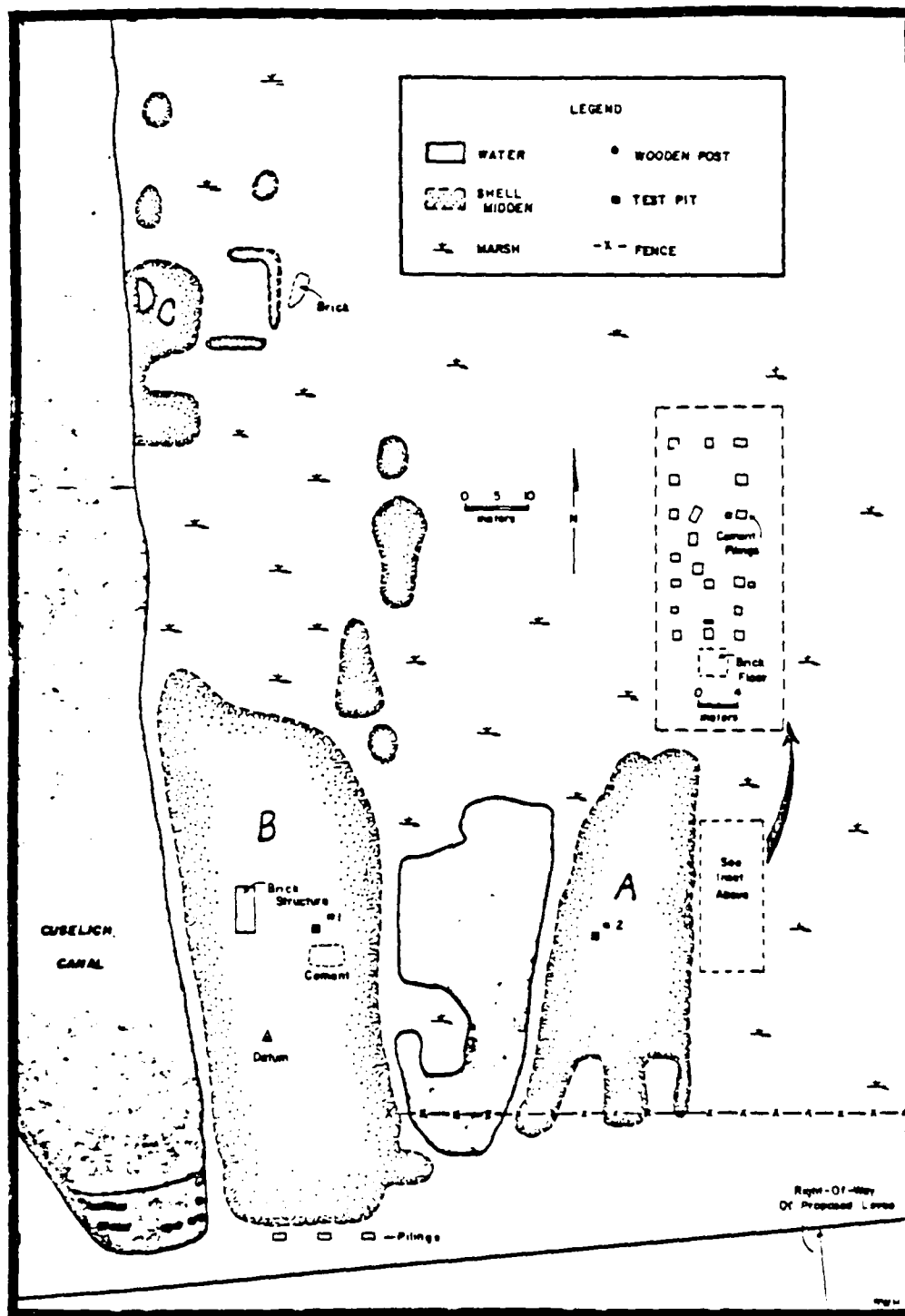


Figure D-6. Sketch map of Ostrica, 16PL66, (from Davis et al. 1981:145).



a



b

Figure D-9. Aerial photographs of Ostrica (16PL66): a) view of general site area; b) view to northeast of structural remains.

may have been used as a lime kiln. Sections of a rusty track, possibly used to transport oysters to the cannery, were found near the brick foundation structure.

Area C is located north of Area B. No structural remains were found in the area. Davis et al. (1981:149) stated that this is where the factory workers lived. Trowel testing and surface examination provided no other artifacts except for the remains of oyster shells.

RESEARCH DESIGN

Statement of Specific Research Goals

The purpose of the proposed investigations at Ostrica (16PL66) is to provide information relevant to the four research goals discussed below. Recovering information concerning these research goals will mitigate adverse impacts to the site deriving from the NOV construction.

1. Currently no documentation exists on inter- or intra-site settlement patterning of Yugoslavian fishing villages. One aspect of research will be to document the intra-site settlement pattern at Ostrica (16PL66). A comparative database exists at Olga (16PL61), a similar site that will also be investigated under this project. Therefore, a potential exists for intra-site comparison and definition of a regional Yugoslavian settlement pattern.
2. When occupied, Ostrica (16PL66) was relatively isolated from the major trade center of New Orleans. The village store served as a supply point for this village and other smaller family settlements in the area. There exists a potential to obtain historical and archeological documentation on the macro-and micro-economic relationships of the site.
3. Ostrica (16PL66) was occupied by a single ethnic group that had limited interaction with mainstream Euroamerican culture. The artifact assemblage from Ostrica (16PL66) should reflect a relatively "pure" cultural assemblage for this site type. A potential exists to examine degrees of cultural assimilation over time at the site. Again, a comparative database to be applied to this question is present at Olga (16PL61), a similar type of site that was, discussed in the preceding chapter.
4. Ostrica (16PL66) was the location of an oyster processing factory. There is a potential for study of the processes of production as a cultural/environmental adaptation to the region on the basis of the existing historical and archeological record. Processes that would be investigated include identification of the oyster procurement and production process, changes in processing and procurement strategies over time, and a related potential for the identification of the period of time required for innovation(s) to develop and spread through the industry and culture.

Specifications of Research Operations

In order to approach the above stated research goals, a series of interrelated research operations will need to be conducted. The results of the operations will then be synthesized in a single document oriented towards addressing the research goals. Figures D-10 through D-13 illustrate the process of the proposed research at Ostrica (16PL66). The research operations are defined as follows.

Historical research. The overview (*Final Report of Cultural Resource Investigations within the U.S. Army Corps of Engineers New Orleans to Venice Hurricane Protection Project*) provides a general historical background of Plaquemines Parish and the Yugoslavian people. Additional detailed historical data is necessary in order to develop a historic context at the site-specific level. The approach will follow the general standards for creation of historical contexts in the Secretary of the Interior's Standards and Guidelines (48FR44738). The historical background will establish potential historical influences on the Yugoslavian oystering (Research Goals 2 and 4), and settlement in terms of site selection and site organizational processes (Research Goals 1 and 3).

Very little historical information is in the survey report on the site (see Davis et al. 1981). Additional research should determine when Ostrica (16PL66) was established and when it was abandoned. To accomplish this, the U.S. Census Records, U.S. Manufacturers Census, Oyster Commission of Louisiana Reports 1904-1912, historical maps, titles, deeds, wills, conveyances etc., will need to be examined. The Plaquemines Parish Courthouse, New Orleans Notarial Archives, and the Central New Orleans Library should have most of these records. The census record data will contain data on the oyster industry (Research Goals 2 and 4) and Yugoslavian entry and settlement in Plaquemines Parish. Data from these records will include the names and locations of various processing areas, the operators, laborers, heads of household, year of entry (within 10 years), place of origin, place of residence (when possible), occupation, and size of the household. The pertinent records should be searched for a period beginning in 1820 (forty years before historical documents address Yugoslavian immigration) and ending in 1920.

All these data will be analyzed to document the influx and spread of Yugoslavian immigrants and their descendants in Plaquemines Parish. These data will in turn be used to address and compare inferred settlement patterns derived from ethnographic work and that derived from the archeological remains of the site (Research Goal 1).

Ethnographic Research. The occupation of Ostrica (16PL66) by Yugoslavian immigrants probably began in the late nineteenth century. Even today the site area is relatively isolated from major population centers. The immigrant families and workers at Ostrica (16PL66) may have retained their ethnic traits and material culture patterns over a much longer period of time than those immigrating to major cities. A relatively intact Yugoslavian culture now exists in Plaquemines Parish. Material culture patterns of Ostrica should exhibit a gradual change over time from functional and material items directly related to the parent culture to those more closely associated with an adaptation to Euroamerican culture. In addition, immigrants moving into the area would

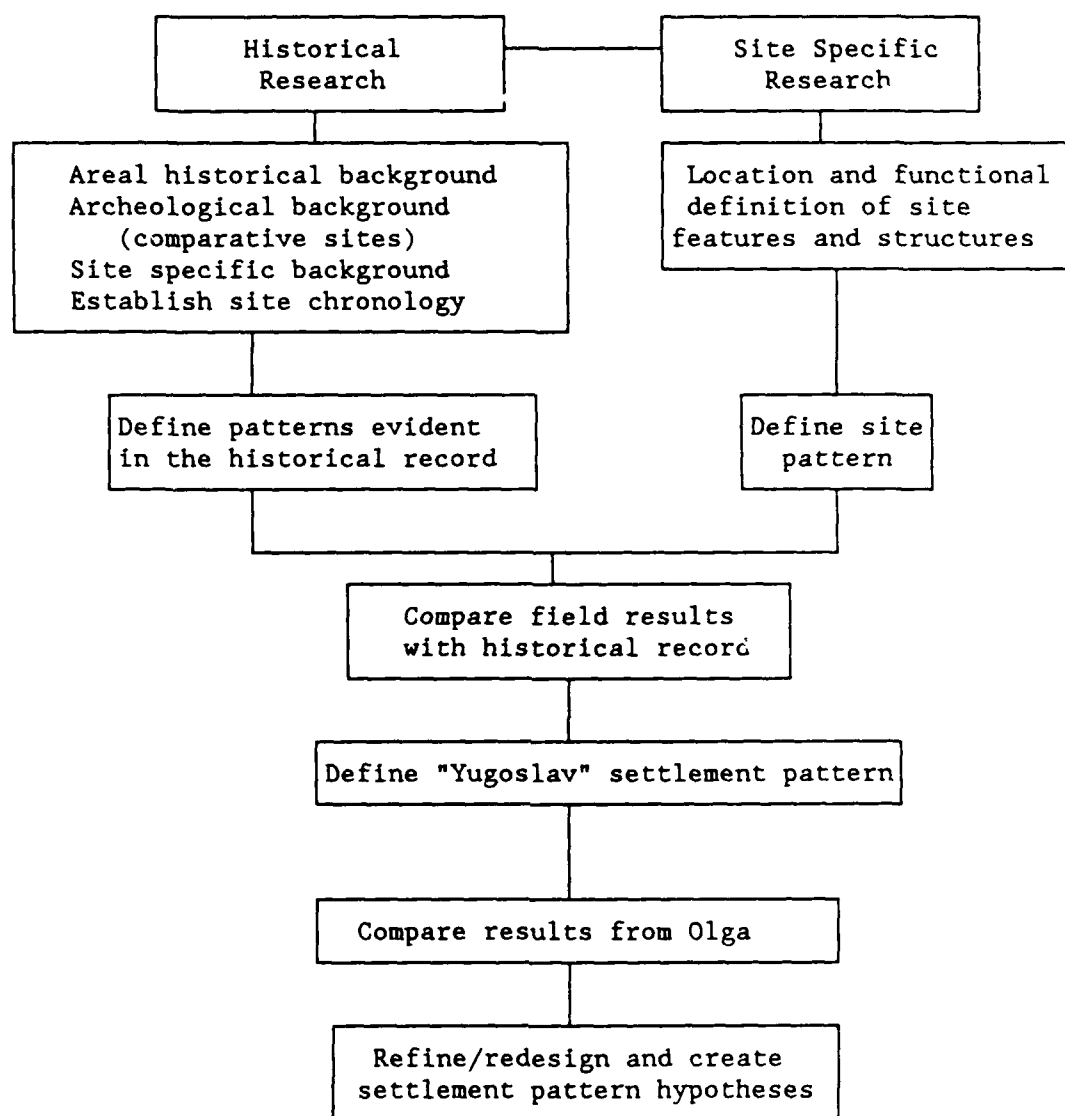


Figure D-10. Diagram of process applied to Research Goal 1 at Ostrica (16PL66).

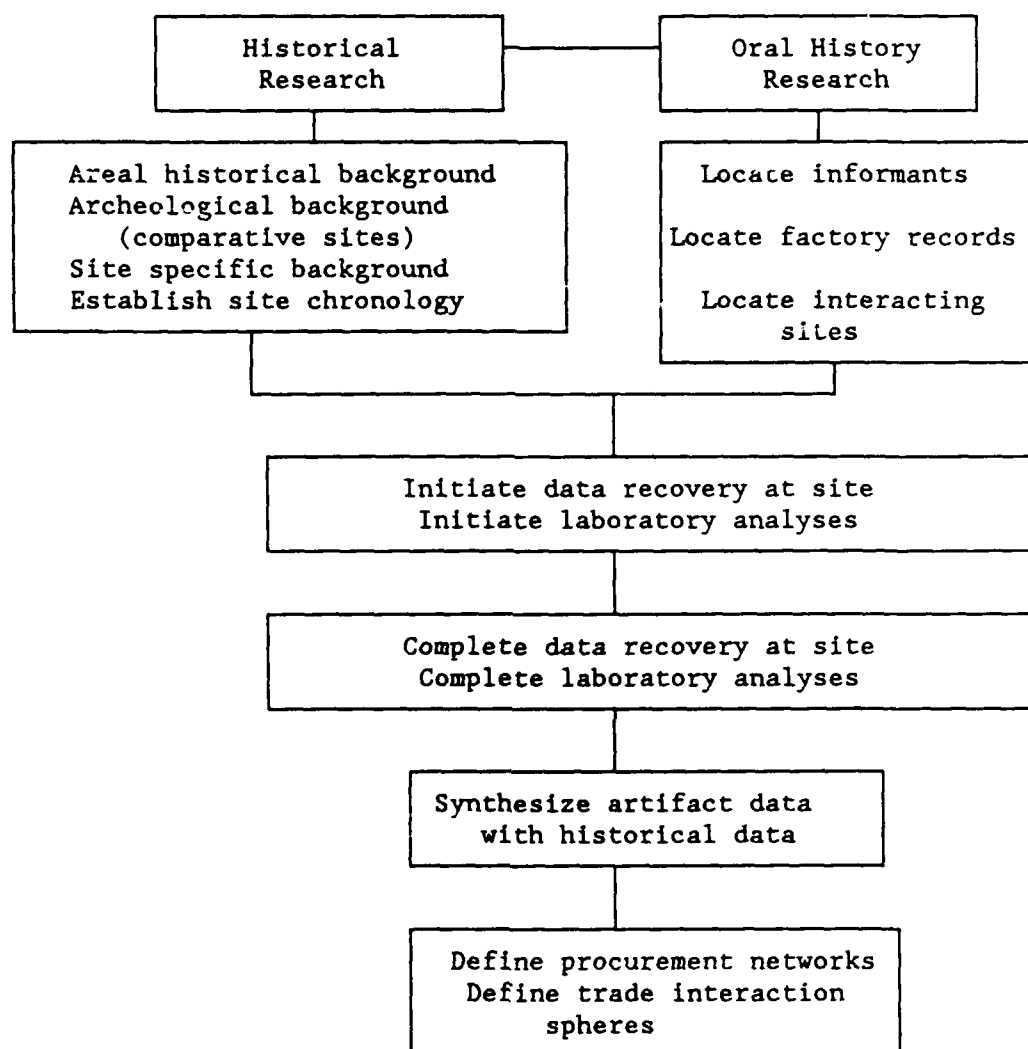


Figure D-11. Diagram of process applied to Research Goal 2 at Ostrica (16PL66).

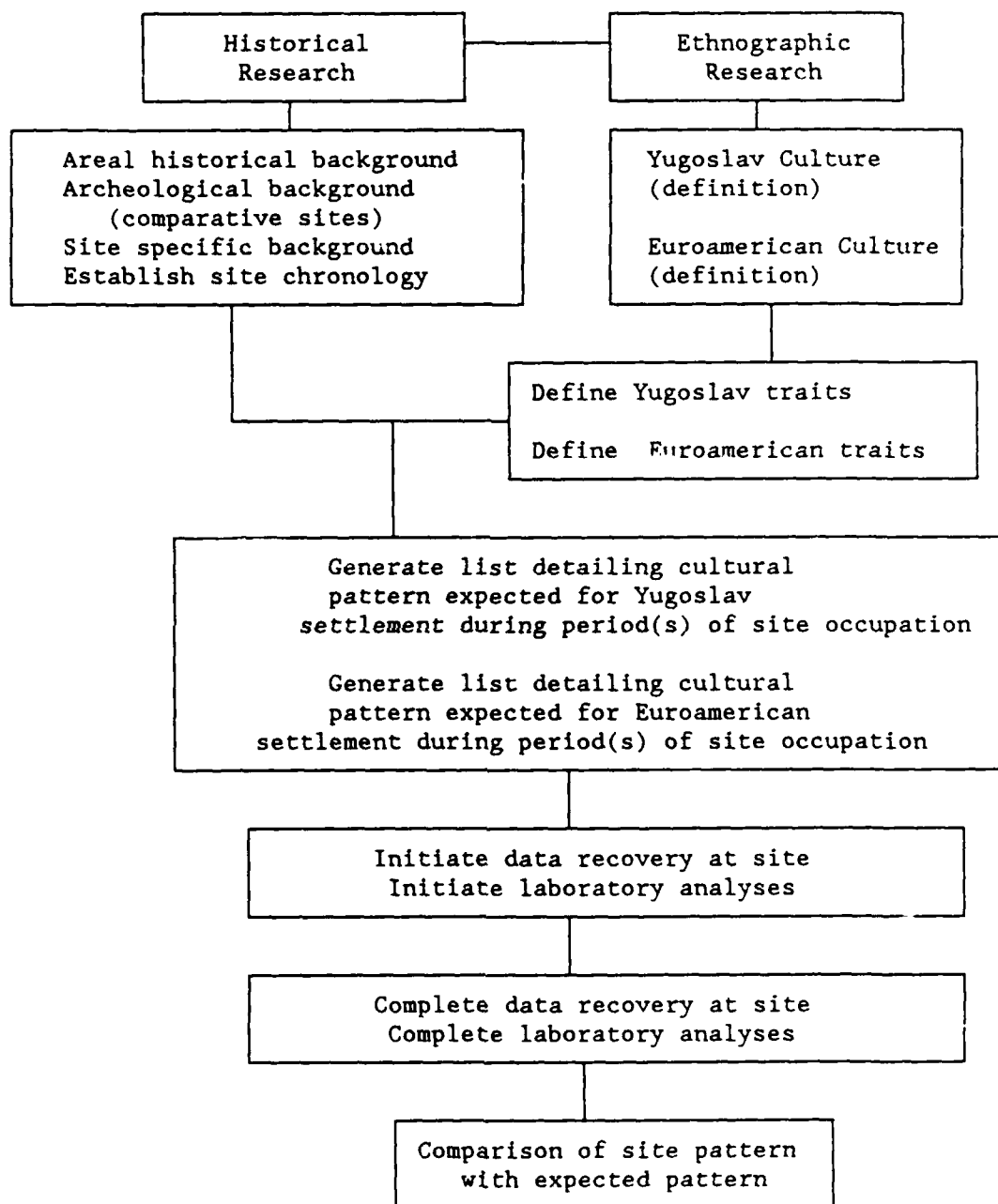


Figure D-12. Diagram of process applied to Research Goal 3 at Ostřica (16PL66).

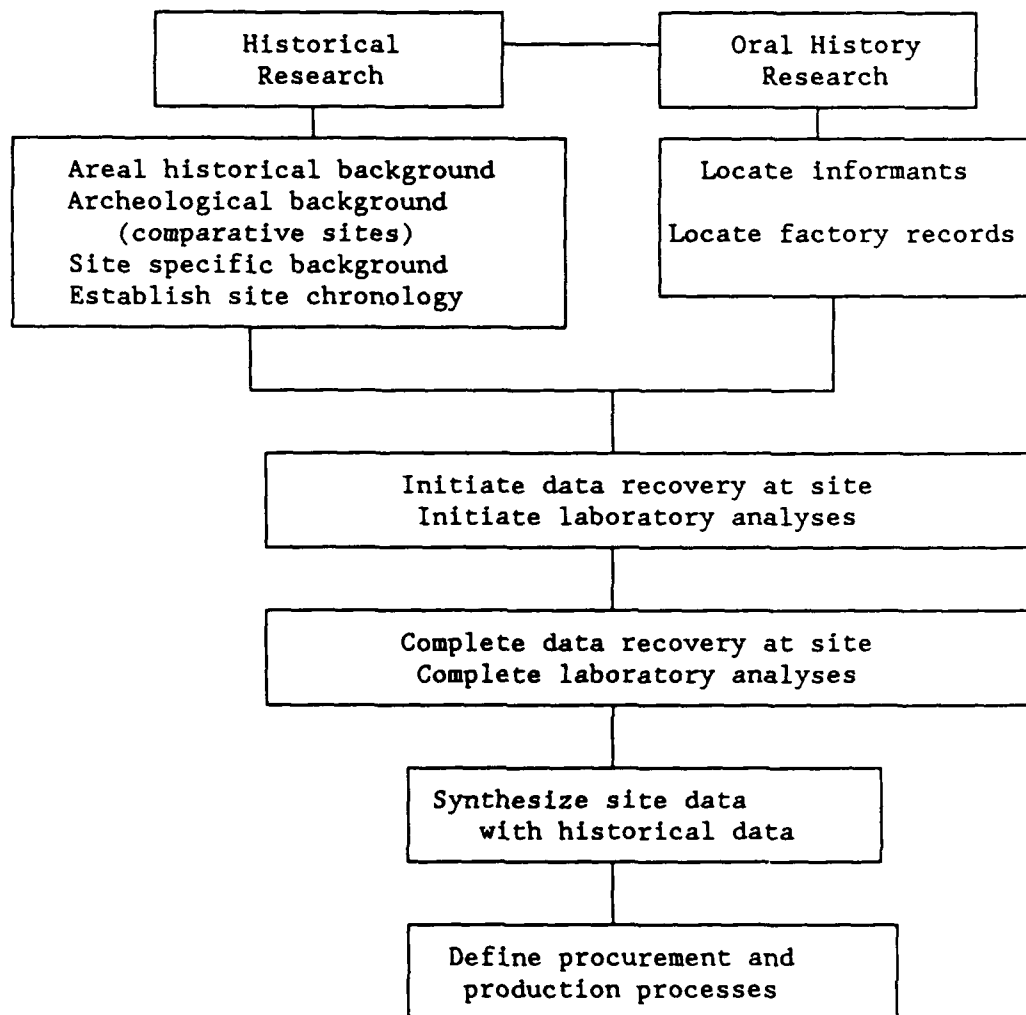


Figure D-13. Diagram of process applied to Research Goal 4 at Ostrica (16PL66).

have been forced to rely heavily on area resources for subsistence with little expenditure for items produced outside the immediate area.

Several studies have been conducted to examine potential archeological manifestations of ethnicity (see Adams 1976; Schuyler 1980). John Otto, Vernon Baker, Joan Geismar, and several others have examined the material culture historically identified with Afro-Americans (cf. Schuyler 1980). The material remains associated with Asian Americans and immigrants has also been examined by Briggs (1974), Evans (1980), Langenwaller (1980), Teague and Shenk (1977), Stapp et. al. (1984), and Landreth et al. (1985) among others.

In Louisiana, studies of the material remains associated with German, Irish, and French inhabitants have been conducted by Castille et al. (1985), Exnicios and Pearson (1985), and Goodwin et. al. (1983). An archeological study of this kind has not been conducted on Slavic groups in Louisiana. Vujnovich (1974) and Lovrich (1967) have written ethnographic accounts on the Yugoslavians in Louisiana that are sources on Yugoslavian folkways and patterns.

An ethnohistory of the site occupants will be compiled from existing documents on Yugoslavian culture (Kane 1944; Lovrich 1967; Vujnovich 1974) and ethnographic interviews. Ethnohistorical research methods and techniques will be used to acquire information pertinent to the definition of Yugoslavian culture during the period of site occupation. Issues to be addressed will include the definition of settlement patterns in fishing villages of the parent culture and how these cultural patterns may be manifested in the archeological record at Ostrica (16PL66). An attempt will be made to locate and contact ancestors of the settlers at Ostrica (16PL66) and other individuals who would have knowledge of the site. Information obtained from these people may help defining site features and structures, and assist in defining the potential cultural processes responsible for the site settlement pattern (Research Goal 1). The data will also be used to identify potential Yugoslavian "traits", such as food and other material preferences, that may be manifested in the archeological record. These data will then be used to compile a listing of items expected to be found on the site. This listing will be measured against materials recovered during fieldwork and compared in the approach to Research Goals 3 and 4.

Archeological background. A search of anthropological and archeological literature will be conducted to obtain information on studies of industrial development and settlement patterns at similar or comparative sites. While such efforts may not have the same research orientation, data applicable to research efforts at Ostrica (16PL61) may be derived from these reports. Additional comparative data may also be derived during fieldwork and background research at Olga (16PL61), a similar site discussed in Chapter II.

Archeological Aspect

Fieldwork at the site will begin only after the preceding background data has been acquired. The field methods should obtain archeological data that are relevant to the research goals concerned with the functional interpretation of intra-site features, activity areas, and structures

related to the oyster factory and habitations. The field method also will obtain a representative sample of material culture remains from the Ostrica. Approximately 50% of the site will be directly impacted by the proposed construction. Archeological fieldwork will be concentrated on this portion of the site. The recognition of cultural features associated with the factory and living areas, the plotting of individual artifacts, and the analysis of artifact assemblages will be important facets of the proposed research. Several steps are necessary to accomplish this goal. These are listed as below.

Photogrammetry/Aerial Photography. A series of maps and aerial photographs will be examined. These will include Mississippi River Commission survey maps as well as early plats dating to before and during the period of site occupation. Relevant aerial photographs will also be examined. These will include NOD-COE air photographs dating to the 1930s on file at the NOD-COE engineering file room, recent NASA false-imagery photographs, and photographs taken on a reconnaissance fly-over of the project area. From these, a series of single-scale overlays will be produced to show how Ostrica developed, to identify any post occupational disturbances that could influence archeological interpretations, and to quickly locate and verify prominent site structures and features.

Site survey: Pedestrian and Remote Sensing. After the maps have been prepared, a pedestrian survey and remote sensing survey of the site will be conducted to locate and flag isolated artifacts, surface and subsurface features, and structural remains. Pedestrian survey will be conducted in flagged transects at 2 m intervals. It will be conducted within the previously defined site areas A, B, and C, but may extend beyond these areas if the background data has defined a potential for additional features and structural remains outside these areas. Because the site is within a depositional environment, an effort will be made to locate and recover data from subsurface features.

Three techniques, aerial photogrammetry, soil chemistry, and magnetometer survey, will help locate these potential subsurface features. Aerial photographs (black and white and false imagery) will be examined for possible subsurface features indicated by topographic and vegetative anomalies.

Soil chemistry tests will follow guidelines established during the Phase I mitigation of Olga (16PL61) (see Chapter II). The use of soil chemistry at Ostrica depends on identifying a reliable suite of chemical tests for locating subsurface features during the testing at Olga (16PL61). The technique will not be used if reliable results cannot be obtained.

A survey with a proton precession magnetometer will also be conducted to locate subsurface features. The survey will be conducted prior to chemical testing to prevent possible interference from soil disturbances resulting from core testing. A control for the non-anomalous magnetic field at the site will first be established by taking 100 or more timed readings at established stations on four undisturbed locations on the site periphery. Readings will be taken at two meter intervals across the site. Two readings will be recorded at each station. If unacceptable

variation occurs between the two readings another set will be taken. A maximum ten gamma interval will be used in producing the magnetic contour map of the site. The contour map will then be used in correlation with observed anomalies created by surface features to identify potential subsurface features at Ostrica (16PL66).

Site mapping. A detailed site map incorporating topography, vegetation, surface features and isolated artifacts, and impact areas will be prepared after pedestrian survey. The site map will structure field investigations and document the spatial organization of the site. The map will be constantly updated during fieldwork. Site vertical and horizontal control will be established by placing a permanent datum at the southwest site perimeter and away from the impact area. A 10 m interval site grid will be established. The grid will be oriented to true north and referenced to the primary datum. If possible, the primary datum and grid will be referenced to USGS grid coordinates. If this is not possible or feasible, then all grid points and measurements will be referenced to an arbitrary datum designation of 500 m north, 500 m east. Vertical control will be maintained through the arbitrary designation of the site primary datum as 0.0 meters. Secondary datums may be established for reference at various points within the site. All elevation points for mapping, artifacts, features, etc., will be taken with either a transit or an EDM.

Site excavation and recordation. Following survey, mapping, and location of potential subsurface features, the next step will be to record known surface features and structural remains associated with the factory and living areas and then to test, locate, and sample any subsurface features. A set of standardized forms will be used to record these features at the site. The format of these will be mutually agreed upon by the NOD-COE and the contractor. These forms will include, but not be limited to, feature, structure, excavation unit, excavation level, photographic, field notes, special samples (e.g., botanical, soil), and soil and feature profile forms. Measurements of historic features and structures will be taken in metric and English standard systems. All these data will be placed into the Cultural Resource Information System (CRIS) in a format mutually determined by the contractor and the NOD-COE.

Excavation techniques will consist of judgemental sampling of site surface features, testing and sampling of defined subsurface anomalies, and obtaining a sample of sheet refuse from the site.

Sampling of a site feature will consist of obtaining samples of material refuse within or surrounding the feature. The size of these samples will be judgementally derived and oriented towards obtaining sufficient data for functional identification of the feature or structure. In the case of a privy or dump, the feature may be excavated in halves or quartered. If the feature consists of the structural remains of a habitation or store, then sampling of sheet refuse around or within the structure may be conducted. In all cases excavations will cease when either a 50% sample of fill has been obtained or a sufficient sample for identification and interpretation has been obtained. Feature excavation will identify the feature's form and function. Excavation units will not exceed 1 x 2 meters square and excavation levels will not exceed 10 cm in depth. A concerted effort will be made to locate and sample

chronologically separate disposal areas associated with the factory and habitations to obtain data pertinent to addressing Research Goals 2, 3, and 4.

All excavations will be conducted in a traditional archeological manner using hand tools (shovels, trowels, etc.). All excavated fill will be screened using 1/4-in or smaller mesh hardware cloth. A four liter flotation sample will be taken from selected levels and control units, to sample fine-fraction remains at the site. Since natural strata are difficult to discern in this environment, it may not be possible to use these strata to separate potential cultural components. When appropriate, units will be excavated in contoured, arbitrary, 10 cm levels.

If well-defined natural or cultural stratigraphic units are encountered during excavation, continuing work will be conducted within these levels. Stratigraphic profiles of representative walls of each excavation unit will be drawn, unless the archeologist determines that the strata are sufficiently similar to justify drawing fewer profiles. All profiles will be drawn on metric graph paper. Profiles will be described following the style of the *Soil Survey Manual* (U.S. Department of Agriculture 1975).

Testing of subsurface anomalies will consist of the placement of a single 1 x 2 meter control unit within the anomaly center. The unit will be excavated in arbitrary 10 cm levels to sterile or until the feature is located and/or functionally defined. If sufficient information is recovered during testing to ascertain the feature's function then no further excavations will be conducted. If additional data is needed, then data from the control block will be used to quickly remove overburden in additional units and recover feature information. Once the feature is functionally and spatially defined, testing/excavation will cease.

A sample of sheet refuse will also be obtained from the site. Sheet refuse analysis can determine and refine intra-site activity areas not represented by features and structures (cf. Moir 1982). A minimum of 300, 50 x 50 cm units will be excavated to culturally sterile soil in an evenly spaced grid pattern across the site to obtain a representative sample of site refuse.

Field photography. Duplicate black and white negatives and color slide photographs will be taken of the site before, during, and after data recovery operations, and of all site features and structures, test units and test unit profiles, and daily operations. Black and white negatives and contact sheets will be subjected to an archival quality wash. The photographs will be organized in a log and will contain the appropriate photo documentation form.

Laboratory analyses. In establishing the format for the laboratory analysis, an initial but far reaching goal is to formulate a single analytical system that can be used to address the stated research objectives in a quantifiable manner. In so doing, the analysis must be adapted to the specific site type rather than any "formally" recognized system. Such an approach based on known historical activities at the locale provides a more culturally-oriented picture of the site

occupation. In order to obtain daily feedback between analytical results, both field and laboratory analyses will be conducted concurrently.

Laboratory forms. A set of forms for use in analysis, will be generated prior to the initiation of fieldwork. These forms will be designed by the contractor in consultation with the NOD-COE. Due to an anticipated large recovery of materials, all recovery data will be input into CRIS for rapid analyses. The field selection for this database will also be designed by the contractor in consultation with the NOD-COE.

Analytical procedures. The field identification and curation of artifacts will be based on a code system. Code 1 will refer to artifacts found in-situ, Code 2 artifacts denote those items found within a quadrant or level of an excavation unit or feature, Code 3 artifacts are those recovered from screening, and Code 4 refer to general surface finds at mapped locations.

Two analytical methodologies, descriptive and functional analyses, will be used to record and analyze of artifacts recovered from Ostrica (16PL66). A combination of these two analytic techniques provides a more culturally-oriented interpretation of Ostrica (16PL66) than would either a solely descriptive or functional system. Descriptive analysis will be used to recover data relevant to the "history of the artifact", that is, its place of origin, manufacturing technology, and dates of manufacture. Data derived from descriptive analysis will be used in the determination of trade networks (Research Goal 2), and the level of technology used at the factory and living areas (Research Goals 3 and 4). In combination with historical documentation, descriptive analysis will also be used to differentiate socioeconomic status of the site occupants (Research Goal 3).

Trade networks between Ostrica (16PL66) and the outside world will be examined in an approach similar to that utilized by Adams (1976) and Landreth et al. (1985). They emphasize the use of manufacturing trademarks and supply networks to interpret the site's relationship to the outside world. A potential exists to extend the knowledge of trade linkages at the site through these analyses.

The second level of analysis will consist of functional identification of artifacts. Artifacts will be examined using a functional typology similar to that used by Sprague (1981), Adams (1980), and Castille et al. (1985) which can help in the identification of cultural activity areas. Functional groupings will be derived from a synthesis of historical data on this site type and the traits listing generated during ethnographic research. For example, certain types of artifacts and features (e.g., oyster tongs, shell middens) may be associated only with certain activities.

The socio-economic level of the inhabitants of Ostrica (16PL66) will be examined by using various economic scaling methods such as Miller's (1980) classification and economic scaling of nineteenth century ceramics and another ceramic scaling method utilized by Castille et. al. (1985) and modified by Exnicios and Pearson (1985). Ceramic vessel form and decorative techniques will also be examined for variability to determine,

if possible, high status vs. low status localities within the site (see Otto 1975, 1977, 1980; Miller 1980; Castille et al. 1985).

Faunal analyses. In historical archeology, faunal recoveries from a large number of sites have been examined for cultural patterns of meat processing and consumption (cf. Barber 1976; Lyman 1977; Mudan 1978; Dansie 1979; Langenwaller 1980; Gust 1982, 1983, 1984; Stapp et. al. 1984; Landreth et al. 1985). The degree to which socio-economic factors such as ethnicity and status influence the diet is of major concern to historical archeologists and the discipline of anthropology as a whole.

Faunal remains found at Ostrica (16PL66) may indicate subsistence strategies employed by the Yugoslavians pertinent to addressing Research Goal 3. As mentioned earlier, most of the Yugoslavian oystermen and their families lived on their property year round. Some historical accounts indicated that when they were not working at harvesting or processing oysters, they were fishing, hunting and trapping to supplement their diet and their income. A concerted effort will be made to obtain a large sample of faunal materials. A sample of oyster shells from oyster processing areas will be recovered from the site and analyzed in terms of species, seasonality, and breakage patterns. In addition a minimum, 2 liter flotation sample will be collected from each site feature and analyzed for ethnobotanical remains too small to be recovered in the screens (e.g., riparian and avifauna). If possible faunal remains will be examined in terms of species and element, age of individuals, minimum number of individuals, indications of unique butchering patterns, and patterns of habitat exploitation (seasonality). Faunal recoveries will be size graded (25 mm, 13 mm, 6 mm, and 3 mm). This analysis depends on recovering a substantial, well-preserved, and diversified sample.

Curation. Upon completion of the project all artifacts recovered will be curated at a location specified by the NOD-COE. Packaging and cataloging procedures will follow the guidelines for curation established by the curatorial facility. All photographs, field notes, field forms, and computer data generated during the course of this project will be delivered to the NOD-COE, in a mutually agreed upon format, upon acceptance of the final project report.

Report preparation. The report will be combined with the reports on the additional sites under investigation in this project into a single compliance document. The report will follow the NOD-COE guidelines established for cultural resource investigations in Appendix A of the *Final Report of Cultural Resource Investigations Within the U.S. Army Corps of Engineers New Orleans to Venice Hurricane Protection Project*.

IV. RESEARCH DESIGN FOR PHASE I MITIGATION OF DUNN'S CAMP (16PL82), PLAQUEMINES PARISH, LOUISIANA

HISTORICAL BACKGROUND

Dunn's Camp (16PL82) is located on the east bank of the Mississippi River between Mitchell Light (mile 13.5L) and Adolph's Canal (mile 12.8L). It was defined as an historic artifact scatter located along the edge of the river for 20 m and 15 m inland. Subsurface testing in 1980 revealed crushed shell and other debris (Davis et al. 1981). According to Davis et al. (1981:200) the site is the house site of Chip Dunn, who, according to local informants, ran a shipyard on the location in the late nineteenth century. In 1900, Chip Dunn abandoned the house and the local people used the structure as a schoolhouse (Davis et al. 1981:200). There are no standing structures located on the property today. Davis et al. (1981) found what they believe to be primary refuse of Dunn's house. They were unable to map the whole site. Several structures are shown on the 1868 Mississippi River Commission Map (Figure D-14). Davis et al. (1981) recommended further testing to establish the integrity of features at the site. Reconnaissance of this site in March and April, 1987, indicated that minimal alterations had occurred since the previous recording (Figure D-15).

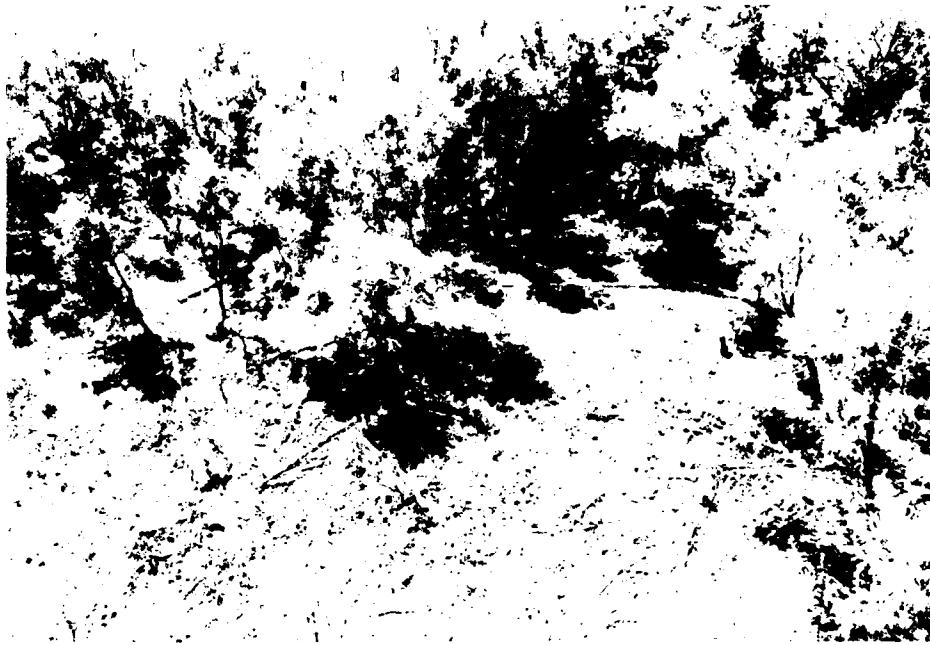
The site is eligible for nomination to the National Register of Historic Places (NRHP) due to its ability to answer research questions concerning shipbuilding and rural residences. Further investigation may provide information on nineteenth century shipbuilding in Southeastern Louisiana and the surrounding area, as well as information on a rural Anglo-American family residence.

RESEARCH DESIGN

Statement of Specific Research Goals

The purpose of the proposed investigations at Dunn's Camp (16PL82) (16PL80) is to provide information relevant to the research goals discussed below, and in so doing mitigate adverse impacts to the site deriving from the proposed NOD-COE project. Investigations at the Dunn's Camp (16PL82) may provide answers to these research questions:

1. Currently there exists little historical documentation on light-industrial nineteenth century shipbuilding in the region. One exception to this is Goodwin et al.'s 1984 report on the *M/V Fox* in Lafourche Parish. However the research effort for this report was oriented towards the analysis and evaluation of a single vessel (Goodwin et al. 1984). Dunn's Camp (16PL82) has the potential to supplement scanty historical data on the shipbuilding industry as well as answer research questions pertinent to the understanding of the organization and design processes of a nineteenth century light-industrial shipbuilder's shop.



a



b

Figure D-15. Aerial photographs of Dunn's Camp (16PL82): a) view of general site area; b) view to the south along proposed levee expansion area.

2. The site has the potential to address research questions relating to intra-site settlement patterning of Anglo-American settlements in the region. While an enormous historical database exists for the study of the larger plantation patterns (cf. Rehder 1971) very little information is available on smaller single-family settlements. One aspect of the research will be to document the intra-site settlement pattern at Dunn's Camp (16PL82). There also is the potential for inter-site comparisons with two Yugoslavian sites (Olga [16PL61] and Ostrica [16PL66]) and a Swedish site (Adolph's Camp [16PL80]) occupied during the same time period. Such data would be used in the definition of potential cultural influences on site occupations in the area. This database may also be of utility in cross-comparison and refinement of the Yugoslavian settlement pattern defined during investigations at Olga (16PL61) and Ostrica (16PL66).
3. Dunn's Camp (16PL82) was relatively isolated from the major trade center of New Orleans during its period of occupation. There is a potential to obtain historical and archeological documentation on the macro- and micro-economic relationships of the site. Additionally a comparative study of possible differences in cultural preference for certain material goods through correlation of trade network and material culture data recovered at Olga (16PL61) and Ostrica (16PL66) could be done.

Specifications of Research Operations

To address the above stated research goals, a series of interrelated research operations will need to be conducted. The results of the operations will then be synthesized into a single document oriented towards addressing the research goals. Figures D-16 through D-18 illustrate the process of the proposed research at Dunn's Camp (16PL82). The research operations are defined as follows.

Historical research. The overview, in the *Final Report of Cultural Resource Investigations within the U.S. Army Corps of Engineers New Orleans to Venice Hurricane Protection Project*, has already provided a general historical background of Plaquemines Parish, maritime history, and Euroamerican settlement of the area. Two other volumes, *A History of Waterborne Commerce and Transportation within the U.S. Army Corps of Engineers, New Orleans District* and *An Inventory of Known Underwater Cultural Resources* (Pearson et al. 1987) and the *Underwater Cultural Resource Management Plan for the U.S. Army Corps of Engineers, New Orleans District* (Jennings n.d.) also provide research overviews of this area. Additional detailed historical data is necessary to develop a historic context at the site-specific level. The approach will follow the general standards for creation of historical contexts in the Secretary of the Interior's Standards and Guidelines (48FR44738). The historical background will be primarily oriented towards obtaining available data on nineteenth century shipbuilding and documentation of associative historical influences which occurred before, during, and immediately after

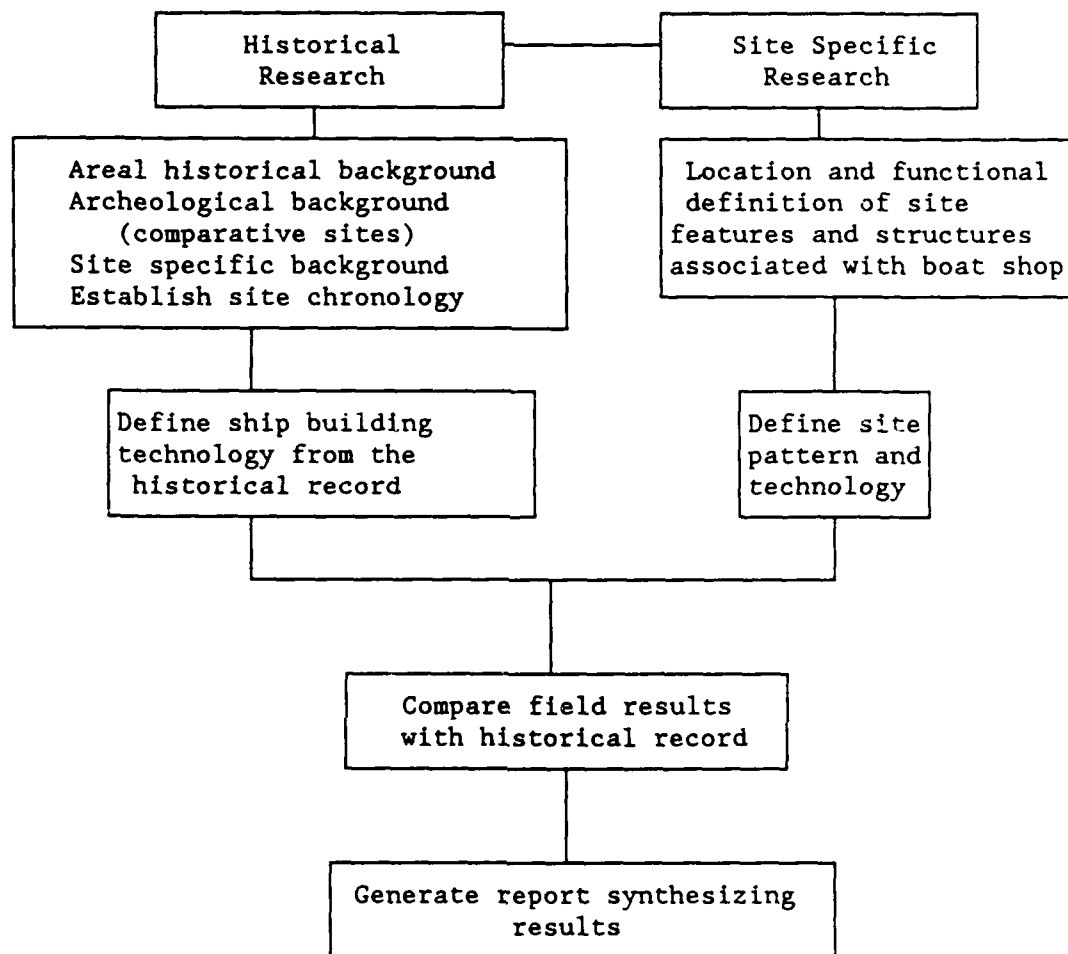


Figure D-16. Diagram of process applied to Research Goal 1 at Dunn's Camp (16PL82).

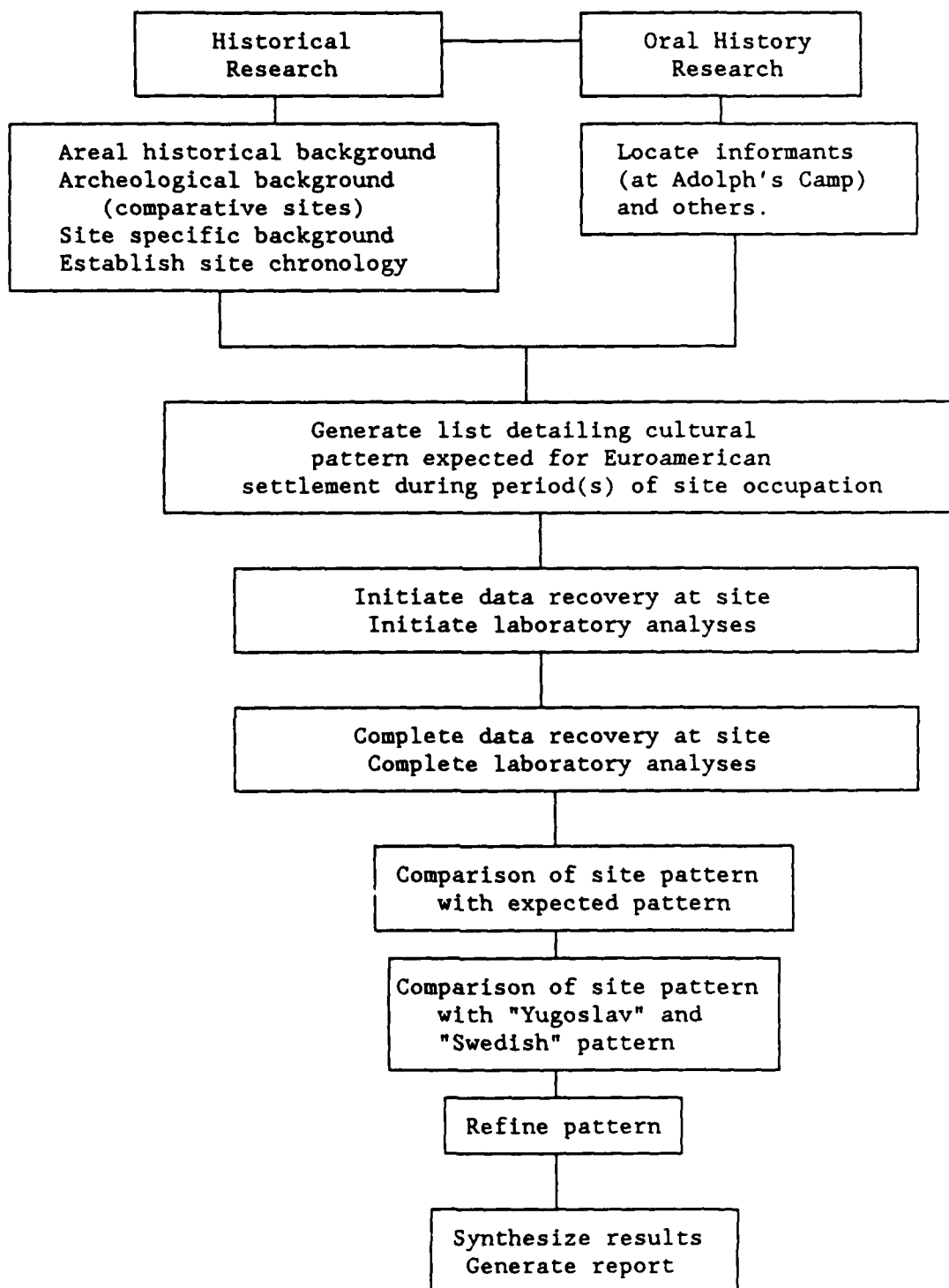


Figure D-17. Diagram of process applied to Research Goal 2 at Dunn's Camp (16PL82).

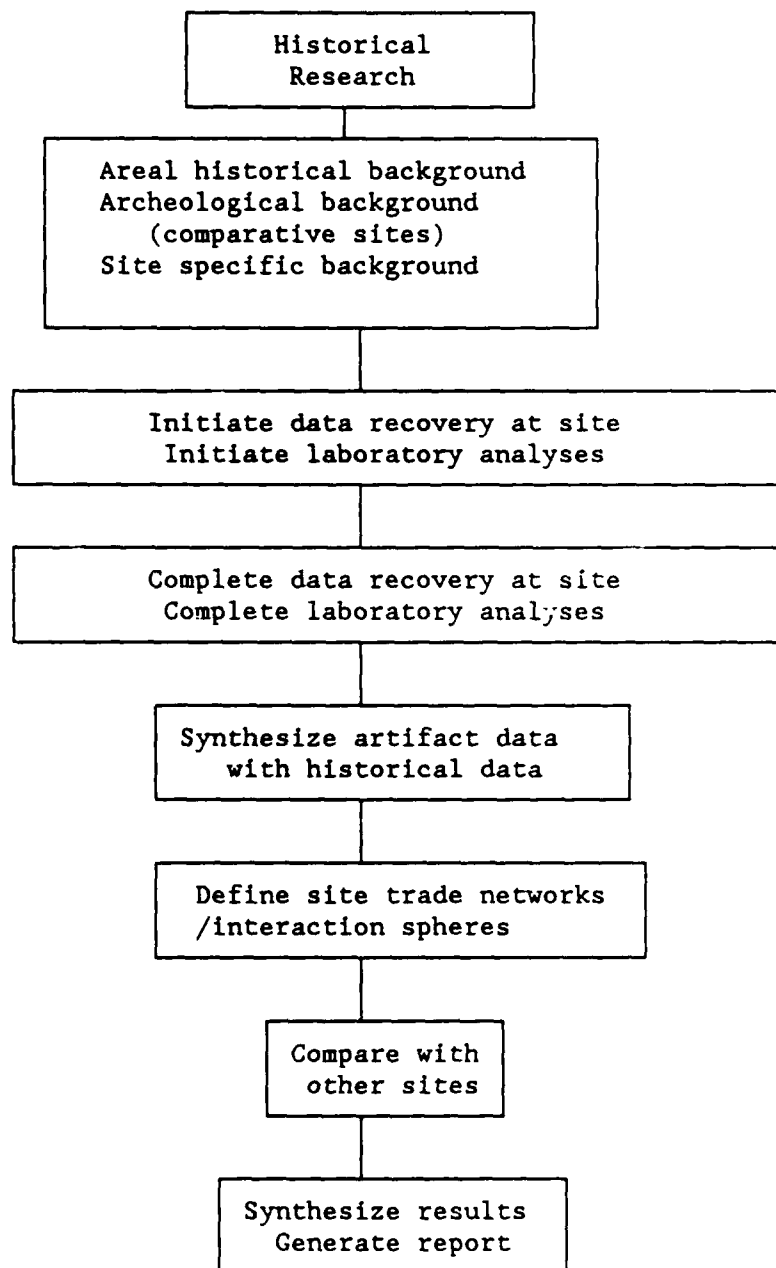


Figure D-18. Diagram of process applied to Research Goal 3 at Dunn's Camp (16PL82).

the period of site occupation. These data will in turn be used to define and address potential historical influences on the shipbuilding industry, site organization, and site settlement.

Site Specific Background. Additional research needs to be conducted to determine when Dunn occupied the site and when it was abandoned. To accomplish this research into U.S. Census Records, U. S. Census of Manufacturers, historical maps, titles, deeds wills, conveyances, etc.. will need to be conducted. Five major sources of data will be used for these searches: the Plaquemines Parish Courthouse, the New Orleans Notarial Archives, the Central New Orleans Library, the Maritime Library at the University of New Orleans, and the Center for Traditional Louisiana Boatbuilding at Nicholls State University in Thibodaux. The census, archival, and courthouse records will be used to produce data on Dunn's entry and settlement in Plaquemines Parish. Data derived from these records will include the names of heads of household, year of entry (within 10 years), place of origin, place of residence (when possible), occupation, and size of the household. Additionally, this research should identify other workers at the locale. Research at the maritime library and Nicholls State University will be oriented towards acquisition of information pertaining to nineteenth century shipbuilding techniques and construction site organization. These data will then be used in interpretation of archeological features and materials at the locale.

Ethnographic Research. An ethnohistory of the site's occupants will be compiled from existing documents on Anglo-American culture during the period of site occupation and oral interviews. Research will be oriented towards acquiring information pertinent to the definition of Anglo-American culture during the period of site occupation and defining cultural patterns which may be manifested in the archeological record. An attempt will be made to locate and contact descendants of Chip Dunn and any other individuals who would have knowledge of the site. Information derived from these people would be used in the definition of site features and structures, and to assist in the definition of potential cultural processes contributing to the site settlement pattern (Research Goal 1). These data will also be used to identify potential Anglo-American "traits", such as food and other material preferences, that may be manifested in the archeological record. These data will then be used to compile a listing of items expected to be found on the site. This listing will be compared against materials recovered during fieldwork at this site, the two Yugoslavian sites (Olga [16PL61] and Ostrica [16PL66]) and the Swedish site (Adolph's Camp [16PL80]).

Archeological background. A search of anthropological and archeological literature will be conducted to generate information on studies of settlement patterns at similar or comparative sites. While such efforts may not have contained the same research orientation, data applicable to research efforts at Dunn's Camp (16PL82) may be derived from these reports. Some comparative works in the area on Anglo-American culture include Goodwin et. al. (1983) and Castille et. al. (1985).

Archeological Aspect

Fieldwork at the site will begin only after the preceding background data has been acquired. Field methodologies oriented towards addressing

the research goals will be concerned with the location and functional interpretation of intra-site features, activity areas, and structures, and obtaining a representative sample of material culture remains from the site. Approximately 90% of the site will be directly impacted by the proposed construction. Fieldwork will focus on this portion of the site. The recognition of cultural features, the plotting of individual artifacts, and the analysis of artifact assemblages will be an important facet of the proposed research. A series of procedural steps are necessary to accomplish this goal. These are defined below.

Photogrammetry/Aerial Photography. A series of maps and aerial photographs will be examined. Maps will include Mississippi River Commission survey maps, as well as early plats dating to before and during the period of site occupation. Aerial photographs will also be examined. These will include NOD-COE air photographs dating to the 1930s on file at the NOD-COE engineering file room, recent NASA false-imagery photographs, and photographs taken on a reconnaissance fly-over of the project area. From these data, a series of single-scale overlays will be produced to be used in definition of the site evolution during its period of occupation, post occupational disturbances that may influence interpretations, and to assist in rapid field location and verification of prominent site structures and features.

Site Survey: Pedestrian and Remote Sensing. Following the acquisition of the preceding data, a pedestrian survey and a remote sensing survey of the site will be conducted to locate and flag isolated artifacts, surface features, and structural remains. Pedestrian survey will be conducted in flagged transects at two meter intervals. The survey will be conducted within the previously defined site area and may extend beyond this area, if pedestrian survey and/or the background historical and photogrammetric data has defined a potential for additional features and structural remains outside this locale.

Because no standing remains appear to exist at the site, and the site is within a dynamic depositional environment, an effort will be made to locate and recover data from sub-surface features. Three techniques, aerial photogrammetry, magnetometer survey, and auger testing will be used to locate these potential features. An additional technique, soil chemistry, will be used if this approach has been determined feasible during previous research at Olga (16PL61) (See Chapter II). Aerial photographs, black and white and false imagery, will be examined for the presence of possible subsurface features indicated by topographic and vegetative anomalies. A survey with a proton precession magnetometer will also be conducted in an effort to locate any subsurface features. The survey will be conducted prior to augering and any soil chemistry testing to prevent possible interference from soil disturbances. A control for the non-anomalous magnetic field at the site will first be established by taking 100 or more timed readings at established stations on four undisturbed locations on the site periphery. These will be used to establish a non-anomalous control for the site survey. Readings will be taken at two meter intervals across the site. Two readings will be taken at each station and recorded. If significant variation occurs between the two readings another set will be taken. A maximum ten gamma interval will be used in producing the magnetic contour map of the site. The contour map will then be used in correlation with observed anomalies created by

surface features to identify potential subsurface features at the site. The site boundaries are not precisely known at present; however, a series of fifty non-random auger tests will be placed across the site at evenly spaced intervals. The tests will be excavated to a minimum depth of one meter. If cultural materials are encountered, the tests will be excavated to culturally sterile deposits.

Site mapping. A detailed site map incorporating topography, vegetation, surface features, isolated artifacts, and impact areas will be prepared after pedestrian survey. The site map will form the basis for structuring investigations at the site. The map will be constantly updated throughout the course of fieldwork. Site control will be established by placing a permanent datum at the southwest site perimeter away from the impact area. For control, a 10 meter interval site grid will be established. The grid will be oriented to true north and referenced to the primary datum. If possible the primary datum and grid will be referenced to USGS grid coordinates. If this is not possible or feasible then all grid points and measurements will be referenced to an arbitrary datum designation of 500 m north, 500 m east. Vertical control will be maintained through the arbitrary designation of the site primary datum as 0.0 meters. Secondary datums may be established for reference at various points within the site. All elevation points for mapping, artifacts, features, etc., will be plotted with either a transit or an EDM.

Site excavation and recordation. Following survey, mapping, and location of potential subsurface features, recording known surface features and structural remains, and testing and sampling of subsurface features will be done. A set of standardized forms will be used to record these features at the site. The format of these will be mutually agreed upon by the NOD-COE and the contractor and for the purposes of consistency will be used on all sites investigated as part of this project. These forms will include but not be limited to feature, structure, excavation unit, excavation level, photographic, field notes, special samples (e.g., botanical, soil), soil profile, and feature profile forms. Measurements of historic features and structures will be taken in metric and English standard systems. For rapid assimilation of site information, these data will be input into the Cultural Resources Information System (CRIS) in a format mutually determined by the contractor and the NOD-COE.

Excavations oriented toward answering the research goals will consist of judgemental sampling of site surface features, testing and sampling of defined subsurface anomalies, and obtaining a sample of sheet refuse from the site.

Sampling of a site feature will be done by obtaining samples of material refuse within or surrounding the feature. The size of these samples will be judgementally derived and oriented towards obtaining sufficient data for functional identification of the feature or structure. In the case of a privy or dump, the feature may be excavated in halves or quartered. If the feature consists of the structural remains of a habitation, the boat shop, or support structures, then sampling of sheet refuse around or within the structure may be conducted. In all cases excavations will cease when either a 50% sample of fill has been

obtained or a sufficient sample for identification and interpretation has been obtained. Feature excavation will be oriented towards identifying the feature's form and function. Excavation units will not exceed 1 x 1 meter square and excavation levels will not exceed 10 cm in depth. When appropriate, units will be excavated in contoured, arbitrary, 10 cm levels. A concerted effort will be made to locate and sample chronologically separate disposal areas associated with the boat shop and habitations for acquisition of data pertinent to addressing Research Goals 1, 2, and 3.

All excavations will be conducted in a traditional archeological manner using hand tools (shovels, trowels, etc.). All excavated fill will be screened using 1/4-in or less mesh hardware cloth. A four liter flotation sample will be taken from selected levels and control units, as a means of sampling fine-fraction remains at the site. Since natural strata are difficult to discern in this environment, it may not be possible to stratigraphically separate potential cultural components.

If well defined natural or cultural stratigraphic units are encountered during excavation, continuing work will be conducted within these levels. Stratigraphic profiles of representative walls of each excavation unit will be drawn, unless the project archeologist determines that the strata are sufficiently similar to justify drawing fewer profiles. All profiles will be drawn on metric graph paper. Profiles will be described following the style of the *Soil Survey Manual* (U.S. Department of Agriculture 1975).

Testing of subsurface anomalies will consist of the placement of a single 1 x 2 meter control unit within the anomaly center. The unit will be excavated in arbitrary 10 cm levels to sterile or until the feature is located and/or functionally defined. If sufficient information is recovered during testing to ascertain the feature's function, then no further excavations will be conducted. If additional data is needed, then data from the control block will be used to quickly remove overburden in additional units and recover feature information.

A sample of sheet refuse will also be obtained from the site. Analysis of sheet refuse can determine and refine intra-site activity areas not represented by features and structures (cf. Moir 1982). A minimum of 200, 50 x 50 cm units will be excavated to culturally sterile soil in an evenly spaced grid pattern across the site to obtain a representative sample of site refuse.

Field photography. Duplicate black and white negatives and color slide photographs will be taken of the site before, during, and after data recovery operations, and of all site features and structures, test units and test unit profiles, and daily operations. Black and white negatives and contact sheets will be subjected to an archival quality wash. The photographs will be organized in a log and will contain the appropriate photo documentation form.

Laboratory analyses. In establishing the format for the laboratory analysis, an initial but far reaching goal is to formulate a single analytical system that can be used to address the research objectives in a quantifiable manner. In so doing, the analysis must be adapted to the

specific site type rather than any "formally" recognized system. Such an approach based on known historical activities at the locale provides a more culturally oriented picture of the site occupation. In order to obtain daily feedback between analytical results, both field and laboratory analyses will be conducted concurrently.

Laboratory forms and recordation. A set of forms for use in analysis, will be generated prior to the initiation of fieldwork. These forms will be designed by the contractor in consultation with the NOD-COE. Due to an anticipated large recovery of materials, all recovery data will be input into CRIS for rapid analyses. The field selection for this database will also be designed by the contractor in consultation with the NOD-COE.

Analytical procedures. The field identification and curation of artifacts will be based on a code system. Code 1 will refer to artifacts found in-situ, Code 2 artifacts denote those items found within a quadrant or level of an excavation unit or feature, Code 3 artifacts are those recovered from screening, and Code 4 refer to general surface finds at mapped locations.

Two analytical methodologies, descriptive and functional will be used to record and analyze artifacts recovered from Dunn's Camp (16PL82). A combination of these two analytic techniques will provide a more culturally oriented interpretation of the site than would either a solely descriptive or functional system. Descriptive analysis will be used to recover data relevant to the "history of the artifact", that is, its place of origin, manufacturing technology, and dates of manufacture. Data derived from descriptive analysis will be used in the determination of the level of technology used at the site (Research Goal 1) and in the definition of trade networks (Research Goal 3).

Trade networks between Dunn's Camp (16PL82) and the outside world will be examined in an approach similar to that utilized by Adams (1976) and Landreth et al. (1985) that emphasizes the use of manufacturing trademarks and supply networks to interpret the site's relationship to other areal sites and the outside world.

The second level of analysis will consist of functional identification of artifacts. Artifacts will be examined using a functional typology similar to that used by Sprague (1981), Adams (1980), and Castille et al. (1985), which will allow the identification of cultural activity areas. Functional groupings will be derived from a synthesis of historical data on this site type. Historical research and oral histories, along with the artifact analysis, will provide information which may allow for the determination of activity areas within the site (Research Goals 1, 2, and 3).

The socio-economic level of the inhabitants of Dunn's Camp (16PL82) (Research Goal 2) will be examined by using various economic scaling methods. Miller's (1980) classification and economic scaling of nineteenth century ceramics and another ceramic scaling method utilized by Castille et al. (1985) and modified by Exnicios and Pearson (1985) are examples. Ceramic vessel form and decorative techniques will also be examined for variability to determine if possible, high status vs. low

status localities within the site (See Otto 1975, 1977, 1980; Miller 1980; Castille et al. 1985).

Faunal analyses. In historical archeology, faunal recoveries from a large number of sites have been examined for cultural patterns of meat processing and consumption (cf. Barber 1976; Lyman 1977; Mudan 1978; Dansie 1979; Langenwalter 1980; Gust 1982, 1983, 1984; Stapp et. al. 1984; Landreth et al. 1985). The degree to which socio-economic factors such as ethnic group and socio-economic status influence the diet is of major concern to historical archeologists and the discipline of anthropology as a whole.

Faunal remains found at Dunn's Camp (16PL82) may indicate subsistence strategies employed by the Anglo-Americans pertinent to addressing Research Goal 3. A concerted effort will be made to obtain a large sample of faunal materials from the locale for site interpretation and comparison with recoveries from Ostrica (16PL66), Olga (16PL61), and Adolph's Camp (16PL80). In addition a minimum, two liter flotation sample will be collected from each site feature and analyzed for ethnobotanical remains to small to be recovered in the screens (e.g., riparian and avifauna). If possible faunal remains will be examined in terms of species and element, age of individuals, minimum number of individuals, indications of unique butchering patterns, and patterns of habitat exploitation (seasonality). Faunal recoveries will be size graded (25 mm, 13 mm, 6 mm, and 3 mm). This analysis is contingent on the recovery of a substantial, well-preserved, and diversified sample.

Curation. Upon completion of the project all artifacts recovered will be curated at a location specified by the NOD-COE. Packaging and cataloging procedures will follow the guidelines for curation established by the curatorial facility. All photographs, field notes, field forms, and computer data generated during the course of this project will be delivered to the NOD-COE, in a mutually agreed upon format, upon acceptance of the final project report.

Report preparation. The report will be combined with the reports on the additional sites under investigation in this project into a single compliance document. The report will follow the NOD-COE guidelines established for cultural resource investigations in Appendix A of the *Final Report of Cultural Resource Investigations Within the U.S. Army Corps of Engineers New Orleans to Venice Hurricane Protection Project*.

V. RESEARCH DESIGN FOR PHASE I MITIGATION OF ADOLPH'S CAMP (16PL80), PLAQUEMINES PARISH, LOUISIANA

HISTORICAL BACKGROUND

Adolph's Camp (16PL80) is located on the east bank below Adolph's Canal. According to Davis et al. (1981), the site includes a standing wood frame house, a fishing camp and a below ground cemetery (Davis et al. 1981:164). The house is presently occupied and was built by Mrs. Buras' grandfather, Alexander Smith, a Swedish immigrant, who built a house and store on the site. According to Davis et al., Smith "owned cattle, had a kitchen garden, hunted, fished, and trapped for his own family's use" (Davis et al. 1981:164-165). The house now standing on the property was built at or about 1880 (Davis et al. 1981:165). Earlier Mississippi River Commission Maps show a series of structures at the locale (Figure D-19). Smith's descendants have inhabited the site area for 175 years. Davis et al. (1981) recommended the site as not eligible for the NRHP due to recent modifications to the structure.

Reconnaissance of this site in March and April, 1987, indicated that minimal alterations had occurred since the initial recording (Figure D-20). In the *Final Report of Cultural Resource Investigations Within the U.S. Army Corps of Engineers New Orleans to Venice Hurricane Protection Project*, the site, defined as the existing house, the earlier house and store remains, and peripheral activity areas (e.g., cemetery, artifact scatters, dock), has been recommended eligible for the NRHP due to their ability to provide information on an ethnic group and the early oyster industry.

RESEARCH DESIGN

Statement of Specific Research Goals

The purpose of the proposed investigations at Adolph's Camp (16PL80) is to provide information relevant to the research goals discussed below, and in so doing mitigate adverse impacts to the site deriving from the proposed NOD-COE project. As noted above, the site is presently occupied, so any investigations at the site will be contingent upon obtaining permission from the landowner/occupants. Investigations at Adolph's Camp (16PL80) may provide answers to these research questions:

1. The site has the potential to address research questions relating to intra-site settlement patterning of Swedish sites in the region. One aspect of research will be to document the intra-site settlement pattern at Adolph's Camp (16PL80). A potential also exists for inter-site comparisons with two Yugoslavian sites (Olga [16PL61]) and Ostrica [16PL66]) and an Anglo-American site (Dunn's Camp [16PL82]) occupied during the same time period. Such data would be used in the definition of potential cultural influences on site occupations in the area. In addition, because the site has been occupied by a single family

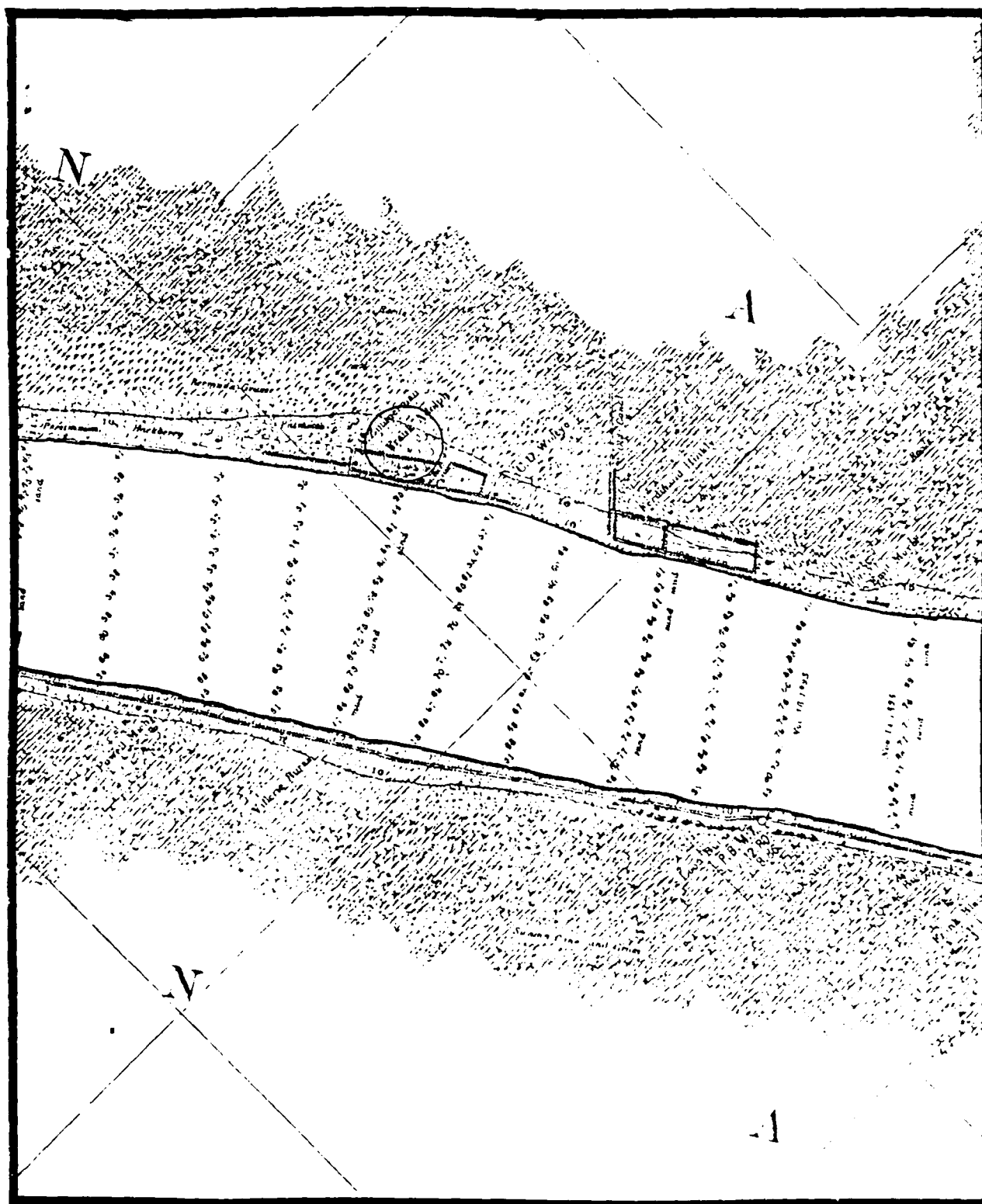


Figure D-19. Excerpt of 1868 Mississippi River Commission map showing Adolph's Ca. 1p (16PL80).



a



b

Figure D-20. Aerial photographs of Adolph's Camp (16PL80): a) view of general site area; b) view northeast of site showing docks presently in use.

group for over 175 years, documentation of cultural changes or assimilative patterns over time may be possible. This database may also be of utility in cross-comparison and refinement of the Yugoslavian settlement pattern defined during investigations at Olga (16PL61) and Ostrica (16PL66).

2. Adolph's Camp (16PL80) was relatively isolated from the major trade center of New Orleans during its period of occupation. A store was established at the site. It may be possible to obtain historical and archeological documentation on the macro- and micro-economic relationships of the site. Additionally a comparative study of possible differences in cultural preference for certain material goods through correlation of trade network and material culture data recovered at the Jurevich store at Olga (16PL61) and at Ostrica (16PL66) could be done.

Specifications of Research Operations

In order to approach the above stated research goals, a series of interrelated research operations will need to be conducted. The results of the operations will then be synthesized in a single document oriented towards addressing the research goals. Figures D-21 and D-22 illustrate the process of the proposed research at Adolph's Camp (16PL80). The research operations are defined as follows.

Historical research. The overview in the *Final Report of Cultural Resource Investigations Within the U.S. Army Corps of Engineers New Orleans to Venice Hurricane Protection Project* has already provided a general historical background of Plaquemines Parish, and European settlement of the area. Additional detailed historical data is necessary to develop a site-specific context. The approach will follow the general standards for creation of historical contexts in the Secretary of the Interior's Standards and Guidelines (48FR44738). The historical background will be primarily oriented towards obtaining available data on Swedish settlement and documentation of associative historical influences which occurred prior to, during, and immediately after the period of site occupation. These data will in turn be used to define and address potential historical influences on site organization and settlement patterns.

Site Specific Background. Additional research needs to be conducted to determine when Alexander Smith began occupation of the site and to determine if any previous occupations occurred that may bias data recovery efforts. To accomplish this, research into U.S. Census Records, historical maps, titles, deeds, wills, conveyances, etc., will need to be conducted. Three major sources of data will be used for these searches: the Plaquemines Parish Courthouse, the New Orleans Notarial Archives, and the Central New Orleans Library. The census, archival, and courthouse records will be used to produce data on Smith's entry and settlement in Plaquemines Parish. Data derived from these records will include the names of heads of household, year of entry (within 10 years), place of origin, place of residence (when possible), occupation, and size of the household. These data will be used to supplement and verify ethnographic accounts of the site.

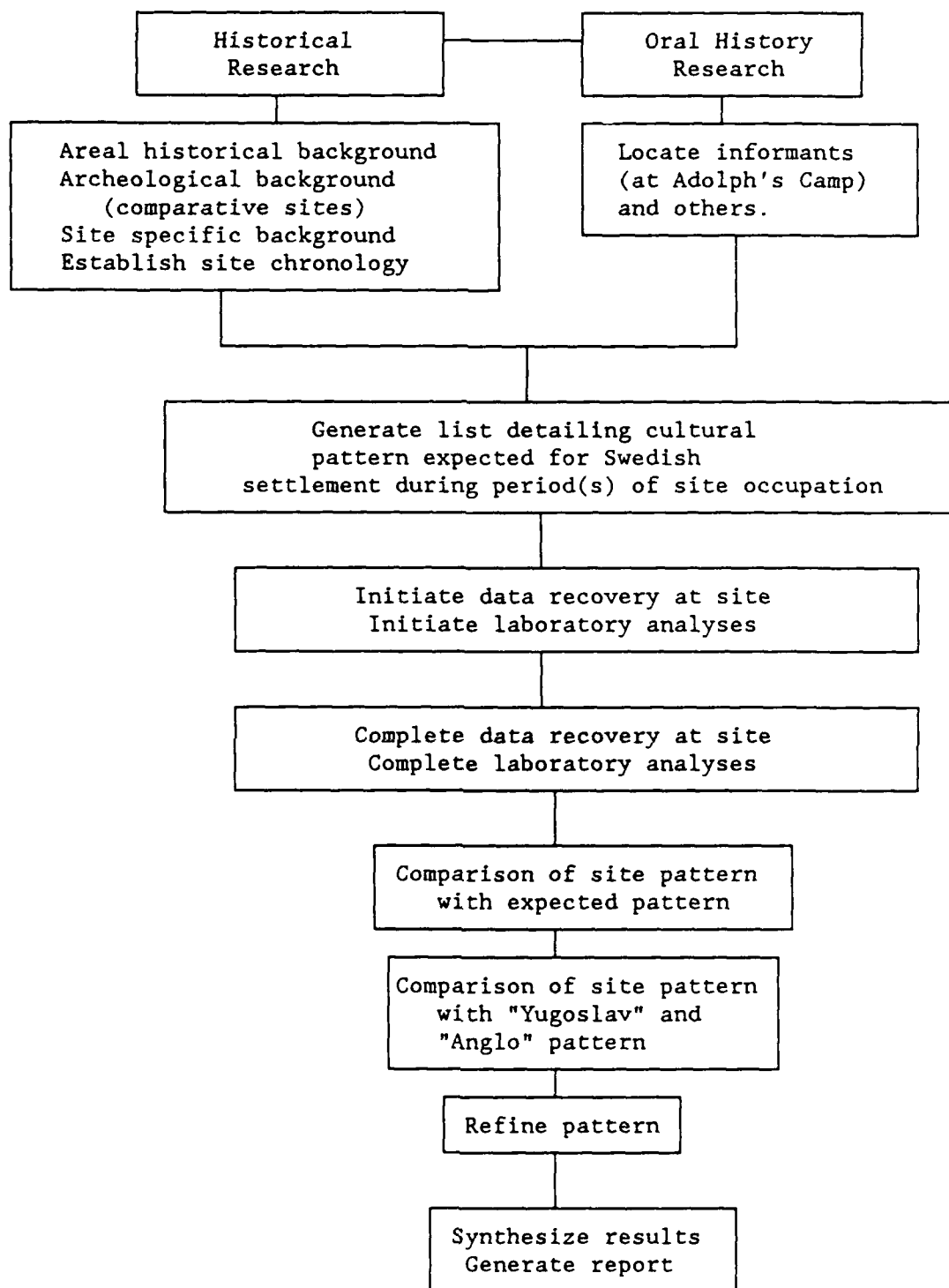


Figure D-21. Diagram of process applied to Research Goal 1 at Adolph's Camp (16PL80).

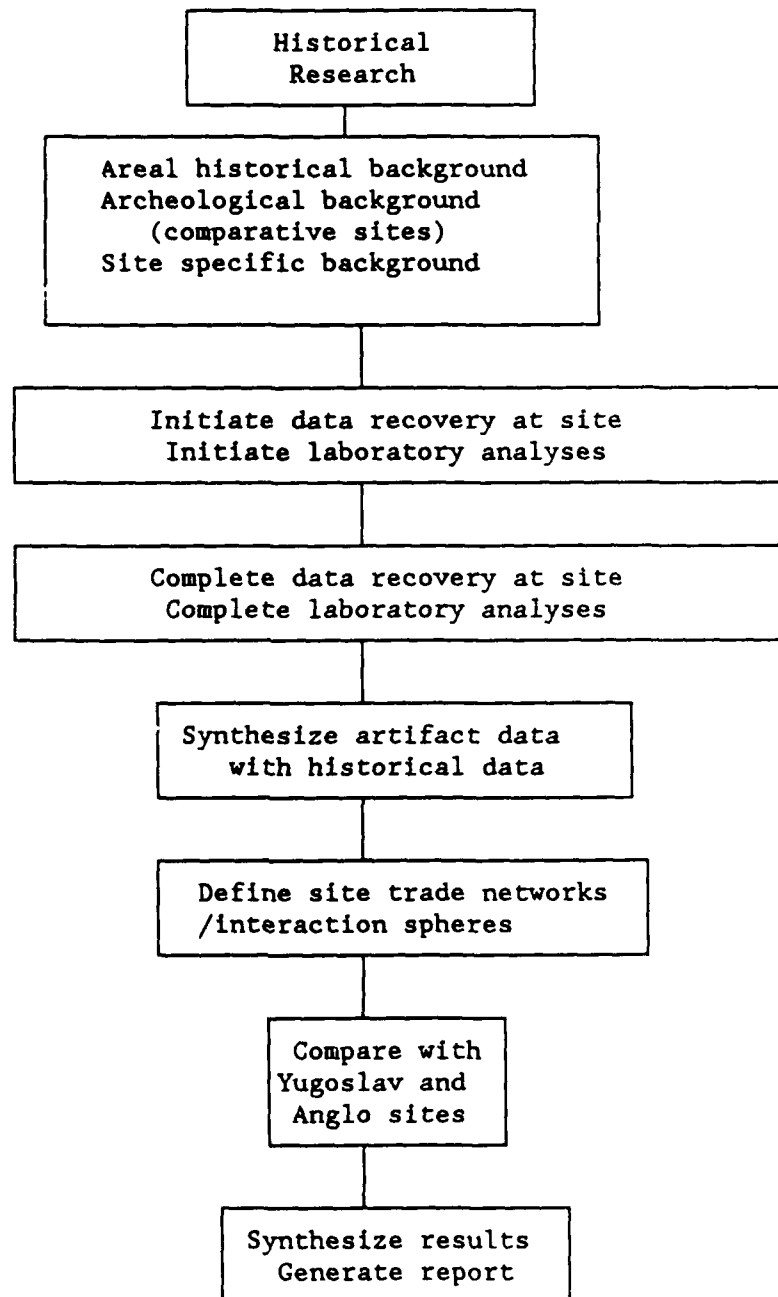


Figure D-22. Diagram of process applied to Research Goal 2 at Adolph's Camp (16PL80).

Ethnographic Research. An ethnohistory of the site's occupants will be compiled from existing documents on Swedish culture during the period of site occupation and oral interviews with the present site occupants and other descendants of Alexander Smith. Research will be oriented towards the acquisition of information pertinent to the definition of Swedish cultural patterns during the period of site occupation and the definition of cultural patterns which may have been manifested in the archeological record. An attempt will be made to locate and contact other individuals of Swedish ancestry in the area who may have information about this and other sites. Information derived from these people will be used in the definition of site features and structures, and to assist in the definition of potential cultural processes behind the site settlement pattern (Research Goal 1). These data will also be used to identify potential Swedish "traits" such as food and other material preferences, that may be manifested in the archeological record. These data will then be used to compile a listing of items expected to be found on the site. This listing will be compared against materials recovered during fieldwork at this site, the two Yugoslavian sites (Olga [16PL61] and Ostrica [16PL66]) and the Anglo-American site (Dunn's Camp [16PL82]).

Archeological background. A search of anthropological and archeological literature will be conducted to generate information on studies of settlement patterns at similar or comparative sites. While such efforts may not have contained the same research orientation, data applicable to research efforts at Adolph's Camp (16PL80) may be derived from these reports.

Archeological Aspect

Fieldwork at the site will begin only after the preceding background data has been acquired. Field methodologies oriented towards addressing the research goals will be concerned with the location and functional interpretation of intra-site features, activity areas, and structures, and obtaining a representative sample of material culture remains from the site. Approximately 50% of the site will be directly impacted by the proposed construction. Fieldwork will focus on this portion of the site. The recognition and interpretation of cultural features, the plotting of individual artifacts, and the analysis of artifact assemblages will be an important facet of the proposed research. A series of procedural steps are necessary to accomplish this goal. These are described below.

Photogrammetry/Aerial Photography. A series of maps and aerial photographs will be examined. Maps will include Mississippi River Commission survey maps as well as early plats dating to before and during the period of site occupation. Aerial photographs will also be examined. These will include NOD-COE air photographs dating to the 1930s on file at the NOD-COE engineering file room, recent NASA false-imagery photographs, and photographs taken on a reconnaissance fly-over of the project area. From these data, a series of single-scale overlays will be produced to be used to define site evolution during its period of occupation, and post occupational disturbances that may influence interpretations, and to assist in rapid field location and verification of prominent site structures and features.

Site Survey: Pedestrian. Following the acquisition of the preceding data, a pedestrian survey of the site will be conducted to locate and flag isolated artifacts, surface features, and structural remains. Pedestrian survey will be conducted in flagged transects at 2 meter intervals. The survey will be conducted within the previously defined site area and may extend beyond this area, if pedestrian survey and/or the background historical, ethnographic, and photogrammetric data has defined additional features and structural remains outside this locale. As noted at the beginning of this chapter, the site is currently occupied by descendants of the original inhabitants. These individuals will be able to locate and define for the surveyors the majority of the site features. Additional efforts to locate features through remote sensing are deemed not necessary, for this locale.

Site mapping. A detailed site map incorporating topography, vegetation, structures, surface features and isolated artifacts, and impact areas will be prepared after pedestrian survey. The site map will form the basis for structuring investigations at the site. The map will be constantly updated throughout the course of fieldwork. Site control will be established by placing a permanent datum at the southwest site perimeter and away from the impact area. A 10 meter interval site grid for control will be established. The grid will be oriented to true north and referenced to the primary datum. If possible the primary datum and grid will be referenced to USGS grid coordinates. If this is not possible or feasible, then all grid points and measurements will be referenced to an arbitrary datum designation of 500 m North, 500 m east. Vertical control will be maintained through the arbitrary designation of the site primary datum as 0.0 meters. Secondary datums may be established at various points for reference within the site. All elevation points for mapping, artifacts, features, etc., will be taken with either a transit or an EDM.

Site excavation and recordation. Following survey, mapping, and location of potential subsurface features, the next step will consist of recordation of known surface features and structures and structural remains, and obtaining a sample of sheet refuse from the site. A set of standardized forms will be used to record these features at the site. The format of these will be mutually agreed upon by the NOD-COE and the contractor and for the purposes of consistency will be used on all sites investigated as part of this project. These forms will include, but not be limited to feature, structure, excavation unit, excavation level, photographic, field notes, special samples (e.g., botanical, soil), and soil and feature profile forms. Measurements of historic features and structures will be taken in metric and English standard systems. For rapid assimilation of site information, these data will be input into the Cultural Resources Information System (CRIS) in a format mutually determined by the contractor and the NOD-COE.

As noted, the site is currently occupied, and any work at this locale is contingent on obtaining permission from the landowners. If excavations are not allowed, then work on the site will cease with mapping and functional identification of site features through oral and historical documentation. Excavations, if allowed, will be oriented towards obtaining data from site features (e.g., store dumps, household dumps)

appropriate to approaching the stated research goals. Excavations will consist of judgemental sampling of site surface features and obtaining a sample of sheet refuse from the site.

Sampling of a site feature will be done by obtaining samples of material refuse within or surrounding the feature. The size of these samples will be judgementally derived and oriented towards obtaining sufficient data for functional identification of the feature or structure. In the case of a privy or dump, the feature may be excavated in halves or quartered. If the feature consists of the structural remains of a habitation or support structures, then sampling of sheet refuse around or within the structure may be conducted. In all cases excavations will cease when either a 50% sample of fill has been obtained or a sufficient sample for identification and interpretation has been obtained. Feature excavation will be oriented towards identification of the feature's form and function. Excavation units will not exceed 1 x 1 meter square and excavation levels will not exceed 10 cm in depth. A concerted effort will be made to locate and sample chronologically separate disposal areas associated with the site's habitations and store for acquisition of data pertinent to addressing Research Goals 1 and 2.

All excavations will be conducted in a traditional archeological manner using hand tools (shovels, trowels, etc.). All excavated fill will be screened using 1/4-in or less mesh hardware cloth. A four liter flotation sample will be taken from selected levels, and control units, as a means of sampling fine-fraction remains at the site. Since natural strata are difficult to discern in this environment, they may not be able to separate potential cultural components. When appropriate, units will be excavated in contoured, arbitrary, 10 cm levels.

If well-defined natural or cultural stratigraphic units are encountered during excavation, continuing work will be conducted within these levels. Stratigraphic profiles of representative walls of each excavation unit will be drawn, unless the archeologist determines that the strata are sufficiently similar to justify drawing fewer profiles. All profiles will be drawn on metric graph paper. Profiles will be described following the style of the *Soil Survey Manual* (U.S. Department of Agriculture 1975).

A sample of sheet refuse will also be obtained from the site. Analysis of sheet refuse can determine and refine intra-site activity areas not represented by features and structures (cf. Moir 1982). A minimum of 100, 50 x 50 cm units will be excavated to culturally sterile soil in an evenly spaced grid pattern across the site to obtain a representative sample of site refuse.

Field photography. Duplicate black and white negatives and color slide photographs will be taken of the site before, during, and after data recovery operations, and of all site features and structures, test units and test unit profiles and daily operations. Black and white negatives and contact sheets will be subjected to an archival quality wash. The photographs will be organized in a log and will contain the appropriate photo documentation form.

Laboratory analyses. In establishing the format for the laboratory analysis, an initial but far reaching goal is to formulate a single analytical system that can be used in approaching, in a quantifiable manner, the stated research objectives. In so doing, the analysis must be adapted to the specific site type rather than any "formally" recognized system. Such an approach based on known historical activities at the locale will provide a more culturally oriented picture of the site occupation. In order to obtain daily feedback between analytical results, both field and laboratory analyses will be conducted concurrently.

Laboratory forms and recordation. A set of forms for use in analysis will be generated prior to the initiation of fieldwork. These forms will be designed by the contractor in consultation with the NOD-COE. Due to an anticipated large recovery of materials, all recovery data will be input into CRIS for rapid analyses. The field selection for this database will also be designed by the contractor in consultation with the NOD-COE.

Analytical procedures. The field identification and curation of artifacts will be based on a code system. Code 1 will refer to artifacts found in-situ, Code 2 artifacts denote those items found within a quadrant or level of an excavation unit or feature, Code 3 artifacts are those recovered from screening, and Code 4 refer to general surface finds at mapped locations.

Two analytical methodologies, descriptive and functional, will be used to record and analyze artifacts recovered from Adolph's Camp (16PL80). A combination of these two analytic techniques provides a more culturally oriented interpretation of the site than would either a solely descriptive or functional system. Descriptive analysis will be used to recover data relevant to the "history of the artifact", that is, its place of origin, manufacturing technology, and dates of manufacture. Data derived from descriptive analysis will be used in the determination of the level of technology used at the site (Research Goal 1) and in the definition of trade networks (Research Goal 2).

Trade networks between Adolph's Camp (16PL80) and the outside world will be examined in an approach similar to that utilized by Adams (1976) and Landreth et al. (1985), who emphasize the use of manufacturing trademarks and supply networks to interpret the site's relationship to other areal sites and the outside world.

The second level of analysis will consist of functional identification of artifacts. Artifacts will be examined using a functional typology similar to that used by Sprague (1981), Adams (1980), and Castille et al. (1985), which will allow the identification of cultural activity areas. Functional groupings will be derived from a synthesis of historical data on this site type. Historical research and oral histories, along with the artifact analysis, will provide information which may allow for the determination of activity areas within the area (Research Goal 1).

The presence of descendants of the original site occupants and the ensuing available oral and historical data present an opportunity for testing the validity of various economic scaling methods currently used in historical archeology. Data from the site ceramic assemblage in

conjunction with the ethnohistoric record will be used to test Miller's (1980) classification and economic scaling of nineteenth century ceramics, and similar techniques employed by Castille et. al. (1985) and Exnicios and Pearson (1985).

Faunal analyses. In historical archeology, faunal recoveries from a large number of sites have been examined for cultural patterns of meat processing and consumption (cf. Barber 1976; Lyman 1977; Mudan 1978; Dansie 1979; Langenwaller 1980; Gust 1982, 1983, 1984; Stapp et. al. 1984; Landreth et al. 1985). The degree to which socio-economic factors such as ethnic group and socio-economic status influence the diet is of major concern to historical archeologists and the discipline of anthropology as a whole.

Faunal remains found at Adolph's Camp (16PL80) may indicate subsistence strategies employed by the Swedish pertinent to addressing Research Goal 1. A concerted effort will be made to obtain a large sample of faunal materials from the locale for site interpretation and comparison with recoveries from Ostrica (16PL66), Olga (16PL61), and Dunn's Camp (16PL82). In addition a minimum, two liter flotation sample will be collected from each site feature and analyzed for ethnobotanical remains too small to be recovered in the screens (e.g., riparian and avifauna). If possible faunal remains will be examined in terms of species and element, age of individuals, minimum number of individuals, indications of unique butchering patterns, and patterns of habitat exploitation (seasonality). Faunal recoveries will be size graded (25 mm, 13 mm, 6 mm, and 3 mm). This analysis is contingent on the recovery of a substantial, well-preserved, and diversified sample.

Curation. Upon completion of the project all artifacts recovered will be curated at a location specified by the NOD-COE. Packaging and cataloging procedures will follow the guidelines for curation established by the curatorial facility. All photographs, field notes, field forms, and computer data generated during the course of this project will be delivered to the NOD-COE, in a mutually agreed upon format, upon acceptance of the final project report.

Report preparation. The report will be combined with the reports on the additional sites under investigation in this project into a single compliance document. The report will follow the guidelines established for cultural resource investigations in Appendix A of the *Final Report of Cultural Resource Investigations Within the U.S. Army Corps of Engineers New Orleans to Venice Hurricane Protection Project*.

VI. PROJECT SCHEDULE AND DELIVERY REQUIREMENTS

PERSONNEL

All personnel assigned to this project will be oriented as to the total scope of the project, the exact work to be performed, the specifications and format to be followed, and the specific responsibilities of each participant. All laboratories and consultants used on this project will also conform to federal requirements. All consultants will be approved by the NOD-COE. Personnel in supervisory and consultant positions will have qualifications that satisfy or exceed the requirements specified in 36CFR66, Appendix C and the Secretary of the Interior's Standards and Guidelines (48FR44738). The project archeologist will meet or exceed the requirements for historical archeologists.

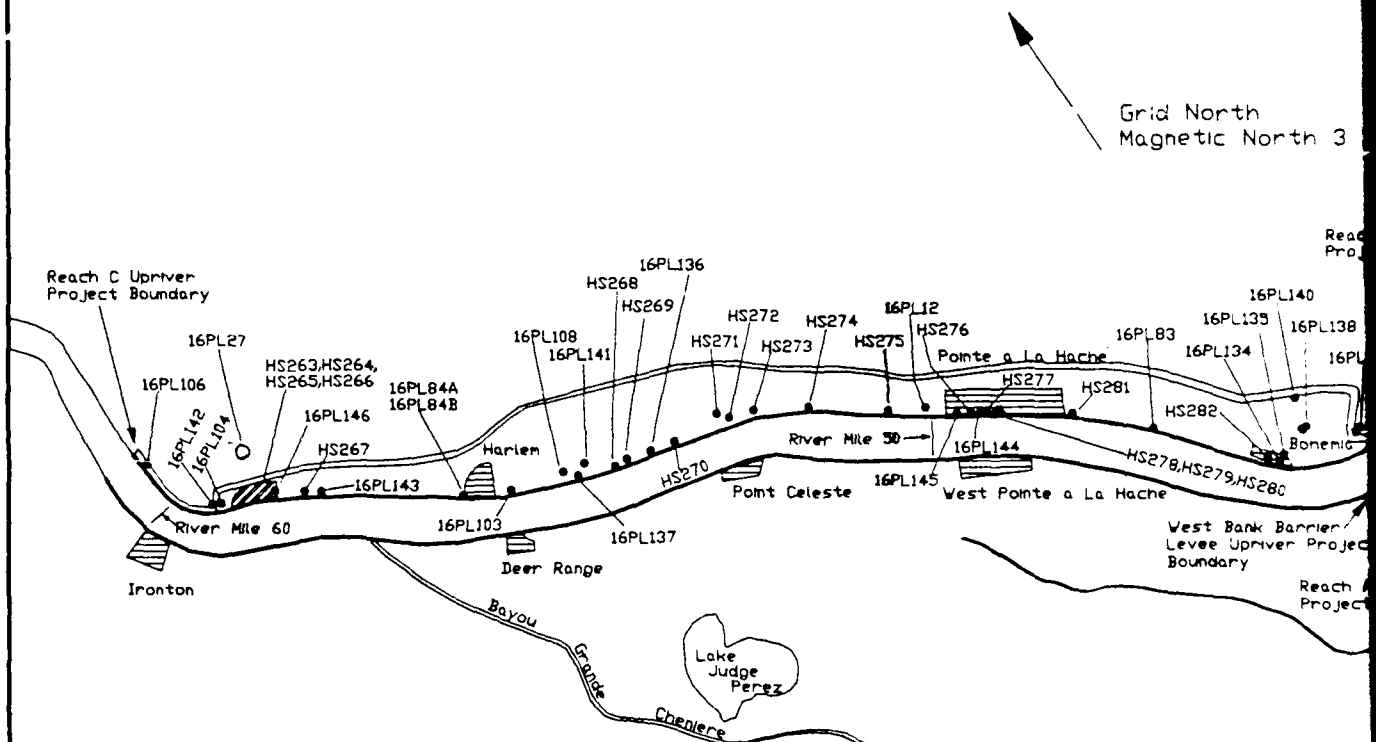
TIMETABLE

The tasks discussed within this annex will be conducted within the following time frame. The starting date for fieldwork will be negotiated with the NOD-COE. Field and laboratory work is scheduled to be conducted over an eight week period upon notification to proceed by the NOD-COE. Two months (8 weeks) are scheduled for the completion of a draft final Phase I Report. The report will incorporate the results of historical research, field and laboratory analyses of data recovered from Olga (16PL61), Ostrica (16PL66), Dunn's Camp (16PL32) and Adolph's Camp (16PL80). If additional Phase II work is determined necessary then recommendations will be made for the completion of compliance work at the locations. If no additional work is deemed necessary then the report will contain adequate information and justifications for these recommendations. The NOD-COE will evaluate the draft final and provide review comments to the contractor within one month (4 weeks) after submittal and all revisions will be made within one month after receipt of review comments.

REPORT PREPARATION

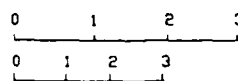
These reports will be combined into a single document that will be appended to the *Final Report of Cultural Resource Investigations Within the U.S. Army Corps of Engineers New Orleans to Venice Hurricane Protection Project* into a single compliance document. The reporting standards will follow the guidelines established for cultural resource investigations in Appendix A of the *Final Report of Cultural Resource Investigations Within the U.S. Army Corps of Engineers New Orleans to Venice Hurricane Protection Project*. Six copies of the draft report will be submitted to the NOD-COE for review. Upon review and approval of the draft final, forty final copies and a reproducible master copy will be submitted to the NOD-COE.

Map Illustrating the Location of Cultural Resource Sites in the New Orleans to Venice Project Area



50% Reduction of Composite From USGS Venice, Empire, Black Bay, and Pointe A La Hache 15' Quadrangles

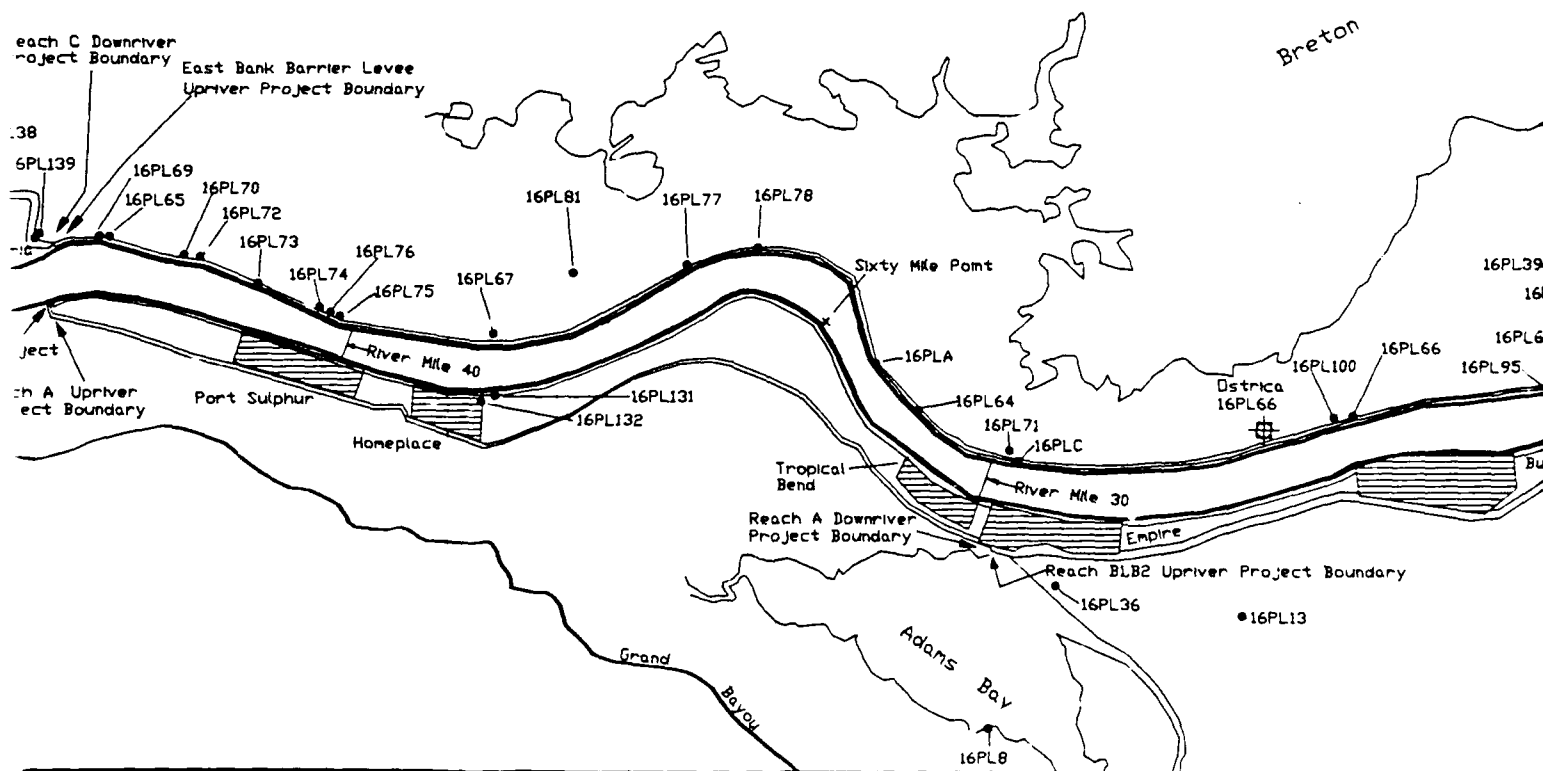
Figure 5

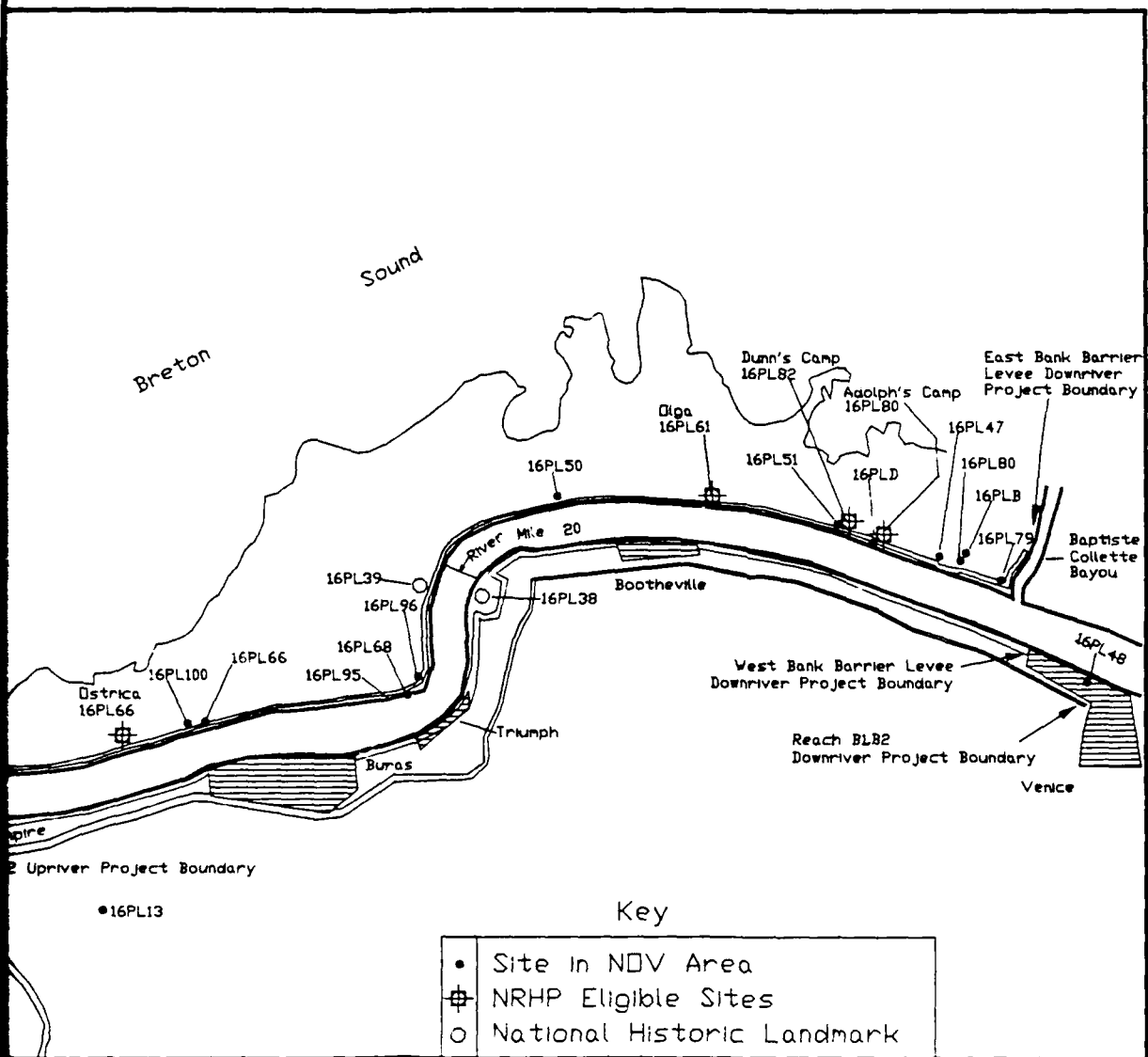


Miles

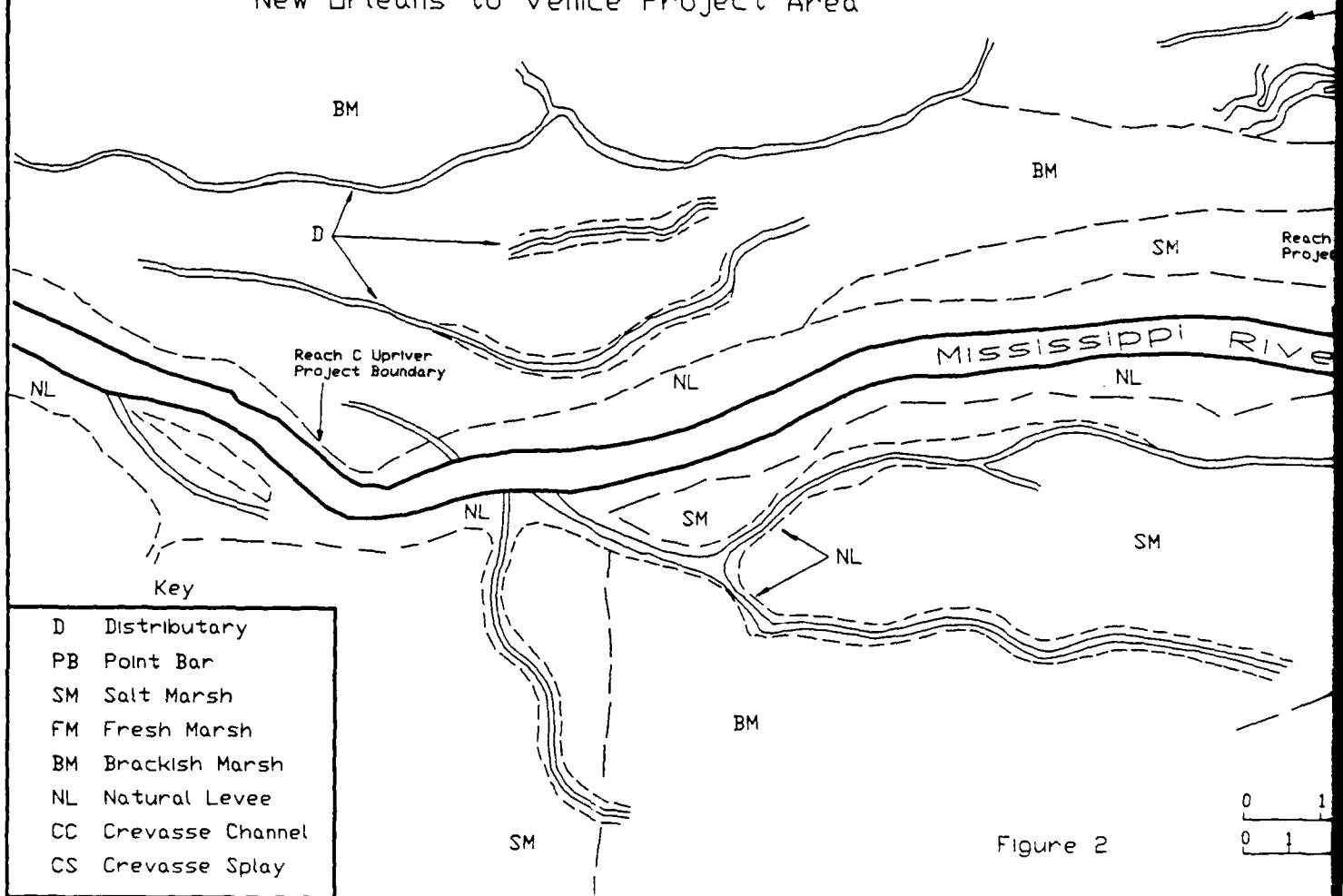
Kilometers

3 31' E

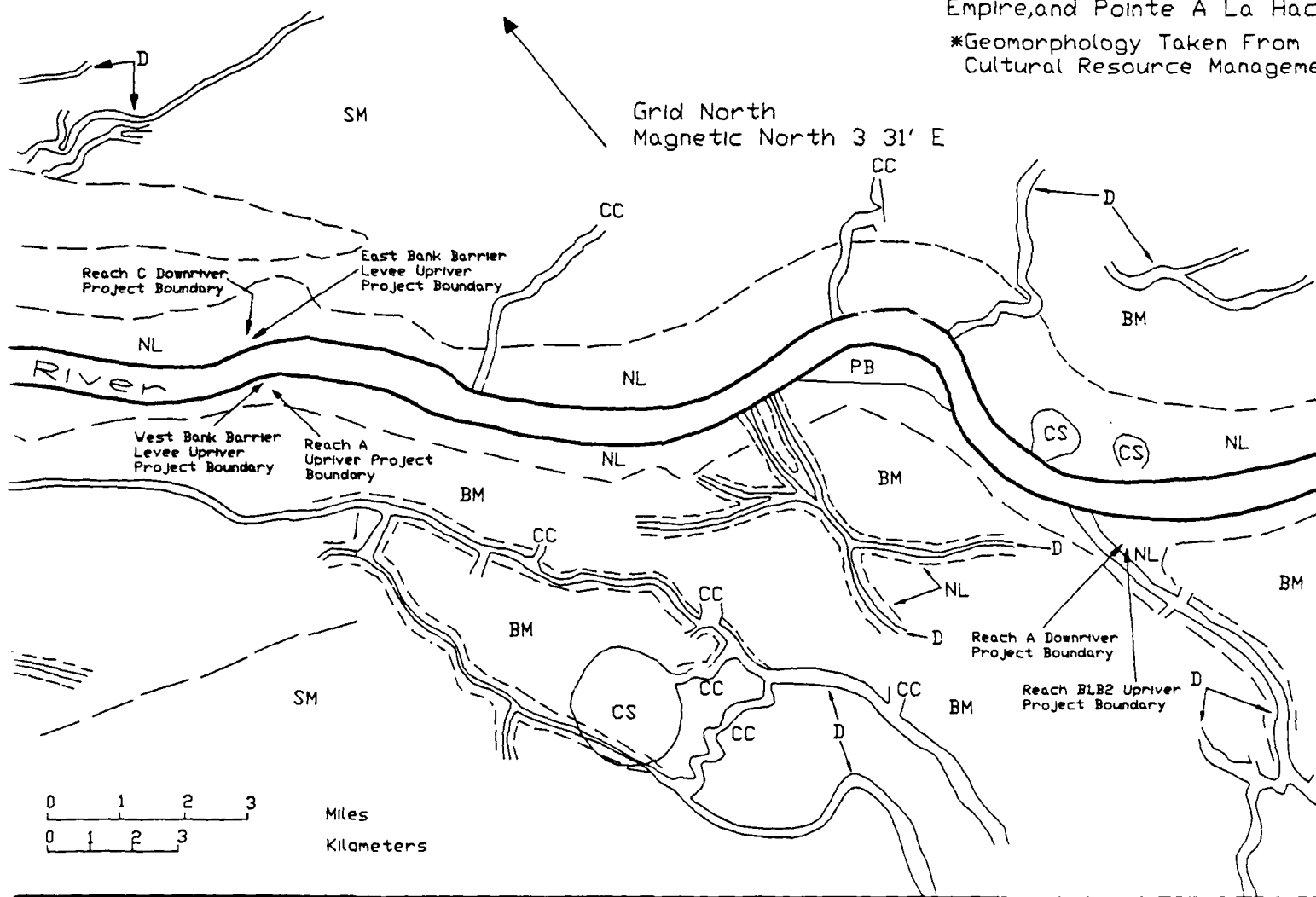




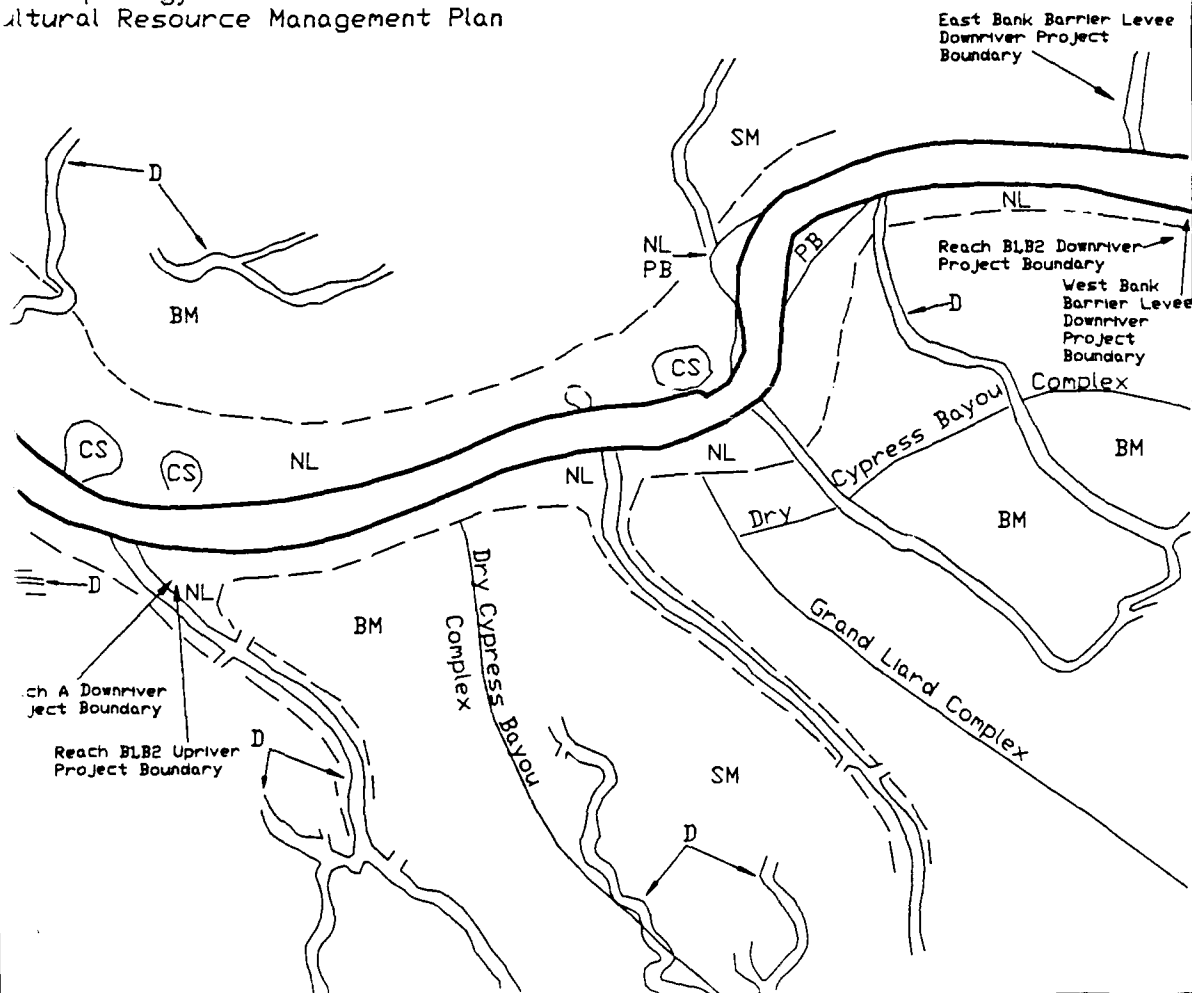
Map Illustrating the Geomorphology of the
New Orleans to Venice Project Area



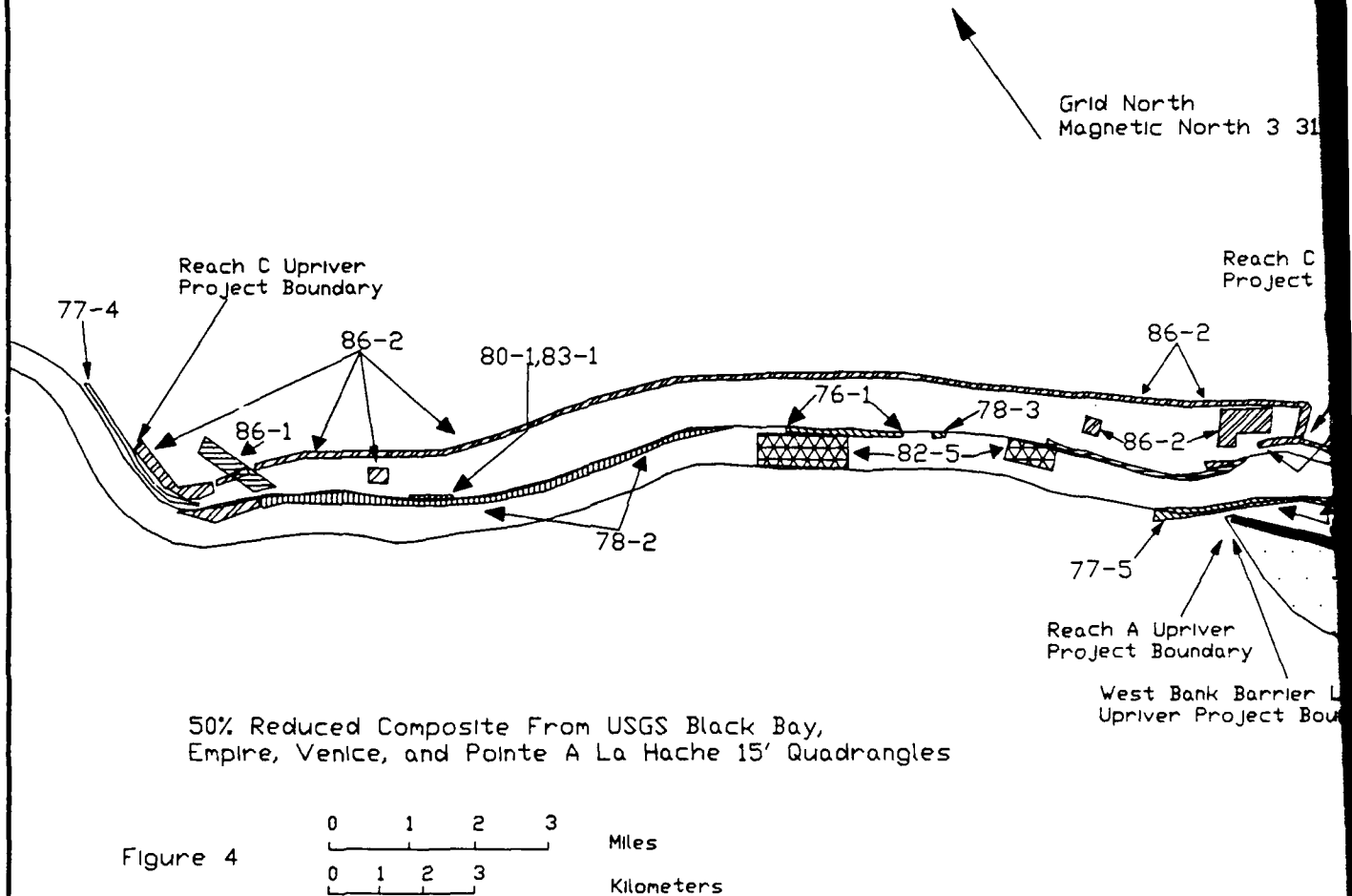
Composite From USGS Venice
Empire, and Pointe A La Hache
*Geomorphology Taken From S
Cultural Resource Management



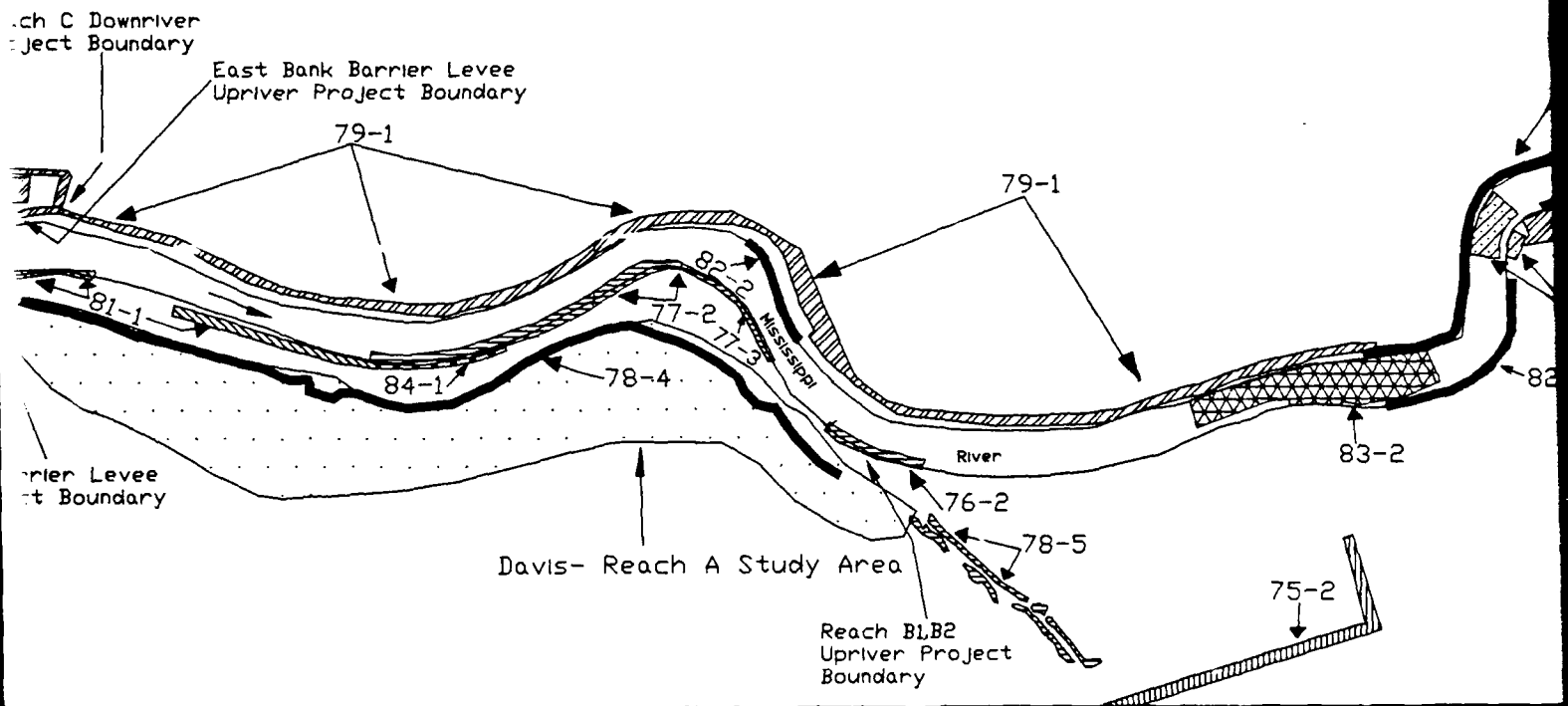
Composite From USGS Venice, Black Bay,
 Pine, and Pointe A La Hache Quadrangles
 Morphology Taken From Southeast Louisiana
 Cultural Resource Management Plan

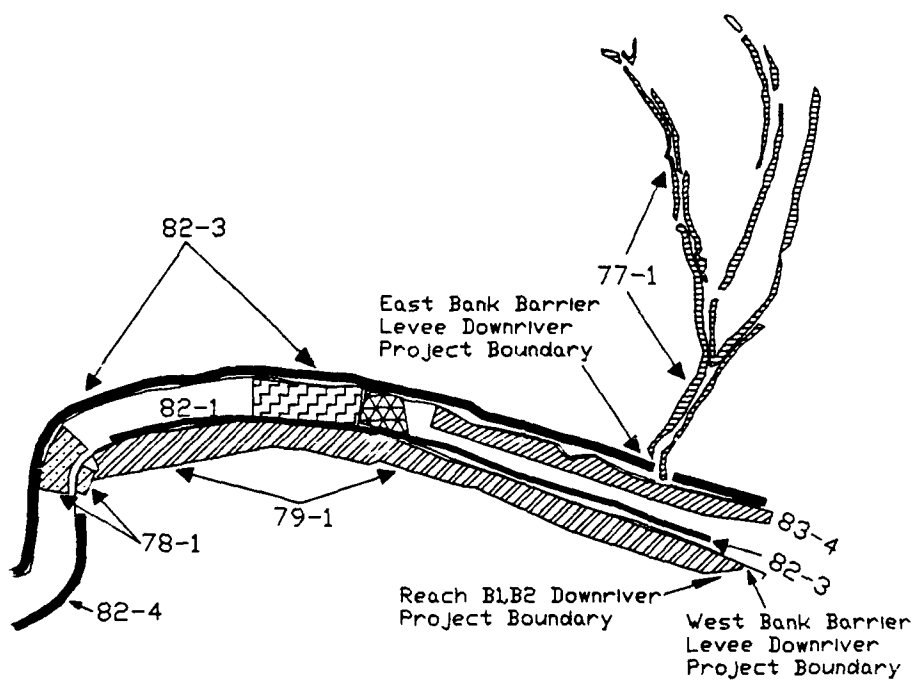


Map Illustrating the Location of All Cultural Resource Management Surveys in the New Orleans to Venice Project Area



3 31' E





Surveys Not Mapped Due
to Insufficient Data

Muller 82-6
Newman 73-1,75-1
Greene 83-3 (Inventory Level)